

University of Birmingham and Network Rail

Railway Lexicon

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This lexicon was originally produced by the Railway Systems Group at the University of Sheffield, in co-operation with staff from Railtrack, Network Rail, Bechtel, HMRI and RAIB and with the support from a number of other organisations and individuals. Members of staff at the University of Birmingham and the team of The Railway Consultancy update the Rail Lexicon on a regular basis.

Obsolete Railtrack terminology is shown in brackets, where known to be no longer in use.

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In general, the UK term “railway” is used rather than the US term “railroad”.

- A -

Abnormal Heavy Road Load – any road load which falls outside the scope of the Construction and Use Regulations because of its weight or weight distribution.

Abnormal Road Load Indemnity – a form of indemnity submitted to Network Rail by a road haulier as prescribed in the Motor Vehicles (Authorisation of Special Types) General Order 1979 (as amended).

Abnormal Road Load Notification – a notice submitted to Network Rail by a haulier which gives loading details of a proposed abnormal road load movement, its proposed date and time of travel, and its proposed route.

Absolute Block – a railway signalling system which is based on the principle of dividing a railway line into a sequence of individual sections or blocks, allied to the principle of never having more than one train on the same line in the same section at the same time. The acceptance of a train by the signaller at the signal box in advance is necessary before a train is allowed to proceed into the Absolute Block Section.

Abstract of Particulars – a subsection of the contract conditions which contains routine details relevant to that specific contract.

Acceptable Quality Level – a value which limits the number of contract checks which are permitted to fail within a predetermined sample (e.g. an AQL of 1.0 indicates that no more than 1.0% of the checks will be permitted to produce a fail without a tightening of the inspection regime.)

Acceptance (of rolling stock) – final part of the process to introduce new types of rolling stock, on-board systems or infrastructure components to the railway network managed by Network Rail.

Acceptance Manager – the Network Rail manager assigned by the RSAB Group Manager, having responsibility for managing the process for a route acceptance request. The Acceptance Manager will be the Network Rail principal point of contact on non-commercial matters to the applicant.

Acceptance Plan – a Network Rail project plan defining Network Rail activities in support of a Route Acceptance Request.

Accepting – UK railway signalling term, 'accepting' refers to the permission given by a signaller for a train to enter the section of line which he or she controls.

Access Agreement – an agreement regulated under the Railways Act 1993 setting out the terms and conditions under which companies/operators obtain access to railway track, stations and certain types of depots.

Access Charge – the charge paid by railway operators for access to rail facilities which are the subject of an access agreement.

Access Planning Software – access planning software system for the planning of track access for both permanent and short-term train schedules. It replaced PROTIM.

Accident – an unexpected, unplanned occurrence which results in physical harm (injury or disease) to an individual, damage to property, a near miss, a loss, or any combination of these effects. “An unwanted or unintended

sudden event or a specific chain of events which have harmful consequence” (*taken from European Railway Safety Directive 2004*) (See also Incident) ^{+RAIB}

Accommodation Bridge – a bridge connecting two areas of land which were under common ownership but separated when the railway was built.

Accommodation Crossing – as for accommodation bridge, but by using a foot crossing over the railway rather than a bridge.

Account Executive – the manager responsible for commercial dealings with the Train Operators.

Accounts Payable – a team of people within the finance function responsible for the correct payment of authorised supplier invoices.

Account Receivable – a team of people within finance responsible for the dispatch and credit control of properly authorised invoices to customers.

Activity Based Costing – the process of identifying the costs associated with particular day-to-day activities or specific tasks and projects.

Actual Costs – the term used to encompass both costs paid over to suppliers and accruals.

Actual Cost of Work Performed – an assessment of the physical progress on a scheme and its financial value. This will include costs for invoices paid and accruals to repeat bills not yet presented for the actual progress achieved.

Add Value Machines – used in some automatic fare collection systems to allow passengers to increase the residual value of a stored value ticket.

Adhesion Coefficient (μ) – the ratio of the tangential and normal forces that exist between the wheel and the rail at standstill and during motion. The adhesion coefficient for rolling motion is usually referred to as μ_R . Generally taken as 0.3 to 0.4 for dry rail, but can be as low as 0.01 for icy and greasy rail.

Adjacent Line – a line or siding next to the line you are on (Rule Book definition)

Adjustment Switch – a device which allows longitudinal rail movement to dissipate thermal forces when CWR is adjacent to jointed track or other features not designed to withstand thermal forces. Adjustment switches are also used when thermal forces, additional to those in CWR, may be encountered such as at long underbridges which are themselves subject to expansion and contraction. (US term: Breather Switch.)

Advanced Passenger Train – high speed tilting train, abandoned in the early 1980s.

Air Rights Development – property exceeding existing building height constructed on and above land owned by Network Rail.

Airless Spraying – the process of atomisation of paint by forcing it hydraulically through an orifice at high pressure

Alignment – the horizontal (line) and vertical (top) position of a railway track, described by curved track of horizontal radius R, tangent track where $R=\infty$, vertical radius and gradient.

Alley (US) – slang word for a track in a switching (marshalling) yard. (UK: marshalling yard.)

Anchor Length – the length of CWR track that is left clipped down during the stressing operation to ensure that no movement occurs at the fixed ends of the length being stressed.

Ancillary Movement – movements of locomotives and rolling stock directly in association with normal day-to-day train services.

Annual Renewal Plan – plan identifying those assets which were to be renewed by Railtrack in the forthcoming contract year.²

Anti-Creeper (US) – a device firmly attached to the base of a rail and bearing against a cross-tie (sleeper), to keep the rail from moving longitudinally under traffic. (UK: Rail Anchor.)

Approved In Principle – approval in principle signifies that a professionally competent person or body has seen appropriate evidence and is satisfied that:

- A scheme chosen to bring about a change to the infrastructure will meet the requirements of the remit;
- appropriate standards and/or design criteria have been proposed for the design/checking phase.

Area Delivery Group – a zonal team charged with meeting the minutes delay targets by identifying, testing and implementing performance improvements.

Arm Repeater – an electrical indicator which shows the position of a semaphore signal arm to the controlling signalman.

Articulation – the core feature of a rolling stock design where two adjacent railway vehicle ends are mounted on a common bogie. Nowadays much favoured by tramcar or light rail vehicle (LRV) designers. Also used for some European high-speed train designs, namely, TGV and Eurostar carriages. It has the benefit of reducing the number of bogies required for a train. Generally only suitable for lighter weight vehicles since the load on each axle is proportionately increased. Usually requires that special lifting systems or bogie drop-pits are provided in maintenance workshops.

Aspect – the visual indication of a colour light (or mechanical) signal as displayed to the driver.

Asset Maintenance Plan – a plan of remedial maintenance work outstanding from the BR maintenance programme prior to creation of Railtrack.

Asset Maintenance Plan Provision – the funding provision provided to Railtrack on company formation to complete the works identified in the AMP.

Asset Management Work Team – the team which led a detailed review of Railtrack's approach to asset management with the key objective of optimising maintenance and renewal costs.

Asset Related Expenditure – any expenditure relating to the enhancement or renewal and, for certain asset categories, maintenance of the railway infrastructure and any other assets as per the Capital Accounting Rules. This will include expenditure relating to Capital Enhancement and Renewal Projects, Asset Maintenance Plan and Station Regeneration Programme. Refer to the Railtrack Investment Regulations, Capital Accounting Rules and SRP Financial Guidelines for further information.

Asset Renewal – replacement by Network Rail of an existing asset whose maintenance is within the scope of the RT1A contract.

Asset Replacement – renewal of an asset undertaken by the contractor at no additional cost to the employer.

Assisted Despatch – a procedure on LUL whereby staff are provided to assist the driver in checking that no person or article is trapped in the doors prior to despatch. This is done when the driver is unable to do this for themselves due to defective equipment or the train stopped in the wrong place.

Associated Society of Locomotive Engineers and Firemen – union which represents many train drivers.

Authority to Recruit – the approval, by a person with delegated authority, for the recruitment of permanent or agency staff.

Automatic Barrier Crossing Locally monitored (ABCL) – type of level crossing with warning lights and half barriers, for use on railway lines where train speeds are no greater than 60 mph (96 km/h). The operation of these is controlled by the approaching train, potentially using a level crossing predictor system. It differs from the AHB system in that there is a white light, at braking distance from the crossing, to indicate to the train driver that the crossing has engaged the closing sequence correctly.

Automatic⁽¹⁾ Block Signal (ABS) – a train control subsystem based on a series of consecutive blocks governed by block signals which are controlled by the movement of trains and certain other conditions (e.g., detection of level crossing closure) rather than by a signaller or train describer driven route setting system. The installation includes automatic line side signals, cab signals or both, actuated by a train or light engine by means of axle counters or track circuits. This is a very basic form of automatic route setting (ARS).

Automatic Cab Signal System (ACS) (US) – a system that automatically operates a display of signal aspects in the cab of a train as well as the cab warning whistle.

Automatic⁽¹⁾ Code Insertion – the means by which, when a train terminates, the next working of its stock is automatically picked up by the signalling in IECC areas.

Automatic Coupler – an automatic coupler allows two vehicles to be attached to each other merely by pushing the two vehicles together. There are various types and systems in use, which range from a simple automatic mechanical coupler (like the 'buckeye coupler' of US origin) to one which is remotely controlled and can connect and secure air and electrical connections in one operation. In Europe only used for Multiple Unit trains and specialised types of rolling stock. The proposed UIC auto-coupler was shelved in the 1970s due to cost but Germany and France are currently carrying out trials of a traction-only auto-coupler.

¹ 'Automatic' Systems: see the comment under the heading 'Automatic Systems' and the associated diagram concerned with Train Control Systems.

Automatic Dropping Device – mechanism which causes a damaged or displaced pantograph to drop automatically to limit (further) damage to the overhead line equipment.

Automatic Fare Collection (AFC) – a revenue collection system common on metros and urban railways which requires the passenger to buy a ticket and use it to release an entrance and / or exit gate to permit access to or exit from the railway. AFC reduces the need for ticket checking staff and reduces fraud by passengers and staff.

Automatic Half Barrier crossing (AHB) – type of level crossing with warning lights and half barriers, for use on railway lines where train speeds are no greater than 100 mph (160 km/h). The operation of these is controlled by the approaching train, potentially using a level crossing predictor system where trains operate at several different speeds. The crossing sequence must start a minimum of 27 s before the arrival of the train at the crossing. The barriers are raised immediately after the passage of the train, unless another train is approaching.

Automatic Level Crossing – includes AHB, ABCL, AOCL and AOCL level crossings plus those protected by miniature red/green warning lights.

Automatic Open Crossing, Locally monitored (AOCL) – a type of level crossing without barriers on the Network Rail system where operation of the warning lights is triggered by the train. It also differs from the AHB system in that there is a white light, at braking distance from the crossing, to indicate to the train driver that the crossing has engaged the closing sequence correctly.

Automatic Open Crossing, Remotely monitored (AOCL) – now only one left on the Network Rail system (in Scotland). Here the operation of the crossing is monitored in the signal box but not interlocked with the signalling of the line.

Automatic Railway Inquiry Systems in Europe – a prototype system to provide passenger timetable information.

Automatic⁽¹⁾ Route Setting (System) (ARS) – electronic or relay based system which sets routes using information from a train describer and the timetable without the need for intervention by a signaller.

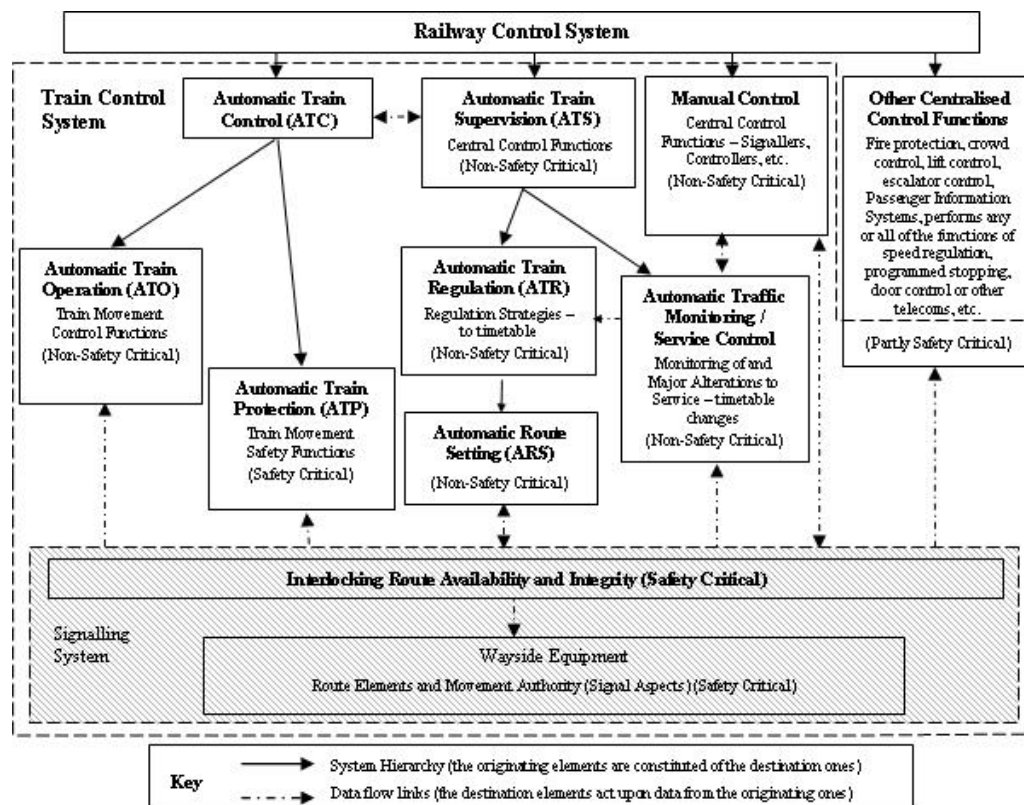


Figure 1: Railway Control and Automation (after Woodland, 2004)

Automatic⁽¹⁾ Signal – a colour light signal which operates automatically as trains travel onto and off track circuits ahead.

Automatic Stop Arm (US) – see (Automatic) Train Stop (UK).

Automatic⁽¹⁾ Systems – the hierarchy of the components of automatic assistance to the operation of trains is not clear-cut. Different authors advocate different structures. The structure presented in Figure 1 is based on a study of railway automation system by D. Woodland.

Automatic⁽¹⁾ Train Control (ATC) – the system for automatically controlling train movements and directing train operations. ATC requires automatic train operation (ATO) and automatic train protection (ATP) subsystems and has features which enhance operational safety, e.g., through the separation of trains by implementing a conflict free timetable, train detection and interlocking of routes. ATC allows the automatic control of trains throughout a railway network, obviating the need for train drivers. The Docklands Light Railway in London provides a good example of this type of operation. (Australians use this acronym to describe automatic train protection.)

Automatic⁽¹⁾ Train Monitoring (ATM) – subsystem to monitor the train service by means of train describers, track circuit occupation or balise based data collection. ATM is normally a subsystem of automatic train supervision (ATS) and is sometimes also referred to as train service monitoring.

Automatic⁽¹⁾ Train Operation (ATO) – the subsystem within the automatic train control (ATC) system which performs functions otherwise assigned to the train operator (driver). ATO is not generally considered to be safety critical since interlockings and automatic train protection (ATP) ensure that trains' routes and movements cannot conflict. Driverless operation of trains requires the transmission of control data using track circuits, inductive loops, balises or radio signals. Radio signals can be diffused by broadcast or leaky cable feeders.

Automatic⁽¹⁾ Train Protection (ATP) – the subsystem within the overall train control system which automatically ensures compliance with **or** observation of **some** or all speed restrictions **or** movement authorities'. Normally, the term ATP refers to the provision of fail-safe protection against collisions, excessive speed, and other hazardous conditions which may arise during train movements by preventing trains from ignoring control commands. This definition covers what could be described as 'Comprehensive ATP' (see below). Less effective systems (such as TPWS, AWS and Trainstops) are sometimes also classified as ATP. As a result, the following hierarchy of functionality is proposed, with ATP as the 'global' term:

Warning Systems	'systems assisting observation of movement authorities, based upon manual activation', e.g., the Driver Reminder Appliance (DRA);
Automatic Warning Systems	'systems automatically assisting observation of movement authorities', e.g. the standard British AWS system;
Automatic Train Stop	'a system automatically enforcing compliance with the limits of movement authorities';
Partial ATP	'a system automatically enforcing compliance with speed restrictions and movement authorities at some locations or for some vehicles';
Comprehensive ATP	'a system automatically enforcing compliance with all speed restrictions and movement authorities (for all vehicles) within a given area'. This type of system is often divided into two sub-categories, Intermittent ATP and Continuous ATP.

There are many different types of implementation but all require the transmission of control data using track circuits, inductive loops, balises or radio signals. Radio signals can be diffused by broadcast or leaky cable feeders.

Automatic⁽¹⁾ Train Regulation (ATR) – subsystem to ensure that the train service returns to timetabled operation or to regular, fixed headways, following disruption. ATR subsystems adjust the performance of individual trains to maintain schedules. ATR is normally a subsystem of automatic train supervision (ATS).

Automatic⁽¹⁾ Train Reporting – electronic system for reporting train movements based on the passing of train identities using a signal panel train describer. [±]

Automatic⁽¹⁾ Train Stop – a wayside system that works in conjunction with equipment installed on the vehicle to apply the brakes at designated speed restrictions, block signals or on a dispatcher's signal, should the driver not respond. Once actuated, the brakes are applied until the train has been brought to stop. See Train Stop.

Automatic⁽¹⁾ Train Supervision (ATS) – the top-level system in real time train control which regulates performance levels, monitors the trains in service and which provides data to controllers to adjust the service to minimise the inconvenience otherwise caused by irregularities. The ATS subsystem also typically includes automatic train regulation functions which are implemented through an automatic routing system (ARS). ATS requires automatic train monitoring (ATM) and service monitoring to be able to adjust the timings of trains appropriately. ATS supports automatic train control by managing the routes or network.

Automatic Vehicle Identification – semi-automatic mechanism for reporting of train movements based on the location of freight rolling stock and subsequent translation to actual train identities/activities reported to TOPS (generally limited to electricity coal services).

Automatic Vehicle Identification (AVI) – transponder based system to identify the number and other useful information of any vehicle in a train using a trackside interrogating unit. The passive UIC standard system is low-cost (about US\$40 per unit for the hardware). AVI components are also being used for low-cost ATP applications.

Automatic Warning System – used to give advance warning to drivers of a signal aspect, a temporary speed restriction or a permanent speed restriction at least 30% slower than the previous limit.

Automatic Warning System (AWS) – British system for alerting the driver to a signal aspect which requires action (horn for danger) or indicating a clear signal ahead (bell for green). Based on a track-mounted permanent magnet with an electro-magnet to cancel the warning.

Autonomous Traction – a form of traction where the power source is contained wholly on the vehicle (Diesel, gas turbines, battery, flywheel, coal, wood) allowing the vehicle to travel a design range between refuelling.

Auxiliary Wayside System – a back-up or secondary train control system, capable of providing full or partial automatic train protection for trains not equipped with train borne CBTC equipment, and/or trains with partially or totally inoperative train borne CBTC equipment. The auxiliary wayside system generally includes train borne equipment and may also provide broken rail detection.

Auxiliary Wire – (see Compound Catenary).

Availability – the ratio between the time during which a piece of equipment (or a human being) is available for operation (whether or not being used) and the total period during which it is needed. Scheduled maintenance, for example, reduces the availability of rolling stock unless carried out during non-service hours.

Axle – the part of a wheelset which links the two wheels. Normally, wheels are pressed onto shoulders machined onto the axle. Axles normally have outside bearings which sit in axle-boxes. Inside bearings are more difficult to install and maintain but reduce the unsprung mass acting on the track.

Axle Arrangement – the way in which powered and non-powered axles are arranged under a vehicle. The most commonly used description distinguishes between powered and non-powered axles where the letter "A" stands for a single powered axle, "B" for two, etc. while numbers stand for the non-powered axles:

- A1A-A1A is the axle arrangement of a locomotive with two bogies, each of which has two powered axles with an non-powered axle in between;
- C0-C0 or Co-Co is the axle arrangement of a locomotive with two bogies with three powered axles.

Other well-known arrangements are B0-B0-B0 (Bo-Bo-Bo) for heavy locomotives and 1A-A1 for EMU cars.

Axle Counter – track mounted equipment which counts the number of axles entering and leaving a track section at each extremity; a calculation is performed to determine whether the track is occupied or clear.

Axle Counter Head – a device that detects the passage of a wheel passing over a running rail

- B -

Back Drive – mechanical arrangement to provide an actuation force away from the tip of a set of points, used to ensure that the switch-blades are correctly positioned throughout their length.

Balancing Segment – an accounting function defined so that the general ledger will not allow unbalanced journal entries to be posted. For example, if your business unit segment is a balancing segment, general ledger ensures that, within every journal entry, the total debits to unit 01 equal the total credits to unit 01.

Balise – track mounted device for communicating with passing trains. Most are mounted on a sleeper in the middle of the track (4 foot). We distinguish inductive and radio based balises, active and passive balises and intelligent and dumb balises. All balises transmit or transmit and receive information in the form of telegrams, e.g., one of the ERTMS standards allows the transmission of up to 512 bits of information three times while a train is passing at up to 250km/h.

- inductive balises operate at low frequencies and use inductive coupling between a fixed coil (antenna) and a moving coil on board the vehicle;
- radio based balises operate at several hundred MHz and use aerials embedded in the balise and suspended underneath the front end of the vehicle;

- passive balises must be powered up by the passing train, usually using a 100kHz signal coupled inductively. The balise detects the presence of a train and automatically transmits the stored data. This is the most common type of balise;
 - active balises use an external supply to transmit data and are often used to power track loops (EUROLOOP) where data is transmitted continuously;
 - dumb balises simply transmit fixed information such as the balise number, number and position of the next balise(s), gradients and speed restrictions etc.;
 - intelligent balises transmit a combination of fixed and variable information such as the aspects of signals associated with the balise. In some cases they can also receive and process information from the train.
- It is possible to have most combinations of the types, e.g., active intelligent inductive balises.

Ballast – selected material placed on the sub grade (US: roadbed) to support and hold the track with respect to its alignment within the bounds of specified top (vertical) and line (horizontal). Ballast preferably consists of accurately graded hard particles, normally stone, easily handled in tamping, which distribute the load, provide elasticity, drain well and resist plant growth. Generally, ballast must consist of broken stones. Granite is a very suitable material thanks to its toughness.

Ballast – the graded stone used for drainage and support of the track. The advantage over slab-track is that it is easy to move for maintenance work.

Ballast Cleaning – the process of separating dirt (fines and crushed ballast) from the ballast by shaking followed by grading of the stone and by depositing the stone which is still usable back onto the track.

Ballast Cleaning – the removal of existing ballast using a machine which grades the excavated ballast, returns good stone to the track and takes fine stone and spoil for disposal.

Ballast Mat – a 50 to 70mm thick elastomer mat placed under the normal track ballast on top of a rigid slab or on top of the sub grade to absorb vibration and to assist drainage. Normally, the ballast mat is placed on an intermediate layer of sand.

Ballast Section – the cross section of a track around and under the sleepers (crossties) and between and above the toes of the ballast slopes. This section may include sub-ballast.

Ballast Shoulder – the portion of ballast between the end of the sleeper (tie) and the toe of the ballast slope. It distributes the traffic load over a greater width of sub grade and helps hold the track in lateral alignment.

Ballast Tamper – a power-operated machine for compacting ballast under sleepers (crossties) using strong tynes which are pushed into the ballast on either side of the sleeper.

Ballast Tamping – compacting ballast under the sleepers to maintain the line and top (US: surface) of track.

Banner Repeater – a signal whose function is to repeat the indication shown by another signal when the driver cannot see the latter.

Barrow Crossing – a level crossing at the end of a station platform for use by (or under the supervision of) rail staff only.

Base Station Controller (BSC) – electronic unit controlling the transmissions from several radio antennas in a radio block system.

Baseplate – a metal casting which supports and holds a flat bottom rail on a sleeper.

Batter – (1) deformation of the surface of the railhead due to wheel impact (P1 and P2 forces), usually close to the joints (ends of rails) or – (2) Receding (sloped) wall as encountered in cuttings and on ledges.

Bay Line – a dead end line adjacent to a platform.

Bearer – timber (or concrete) transverse sleeper supporting the rails in switch and crossings.

Bearing Platform – the top surface of an abutment or pier upon which the superstructure span is placed and supported. For an abutment it is the surface forming the support for the superstructure and from which the hackwall (US) rises. For a pier it is the entire top surface. (US: Bridge Seat.)

Bell Crank – L shaped casting or fabrication pivoted in the centre to change the direction of an actuation force (usually used in switch drives, e.g., to create a back-drive.)

Berth – name occasionally used for a track circuit.

Berth Offset – the difference between the time a train actually occupies a track circuit and the time recorded in TRUST for the event.

Bi-Directional Lines – rail lines which are fully signalled to take trains in both directions.

Bi-Directional Signalling – allows trains to run in either direction over the same section of track under the control of an interlocking (built-in safety system) which prevents collisions. Bi-directional signalling is very useful in releasing for maintenance a single track of a two-track railway but it is more complex and expensive to install than single direction signalling. Single-track lines always have bi-directional signalling. (Swiss Term: banalised track.)

Blanketing – a layer under the ballast to stop clay and soil seeping through.

Blast Cleaning – the preparation of a surface by impingement of a stream of abrasive of high kinetic energy particles ("shot").[±]

Block (Section) – a length of track of defined limits onto which one train only is usually allowed at any one time (exceptions include the joining of trains, split platforms and breakdown recovery). The access to and use of the block section is governed by verbal instruction, track warrant, token or track circuit controlled block (section) signals or by some other type of signalling. Older type block signalling requires the presence of block instruments to communicate with adjoining signal boxes.

Block Bells – these provide a unique manual system of communication between signal boxes. Using an electric single stroke tapper, messages can be passed between boxes in the form of bell codes.

Block Controls – enhancements to the basic block instruments used in an Absolute Block area.

Block Indicator – electrical system which allows communication between two adjacent block posts and which indicates the state of the line between the signal boxes. The system uses a simple two-wire link and relies on bell-codes in Britain and polarities in the link between the posts elsewhere.

Block Instrument – (see Block Indicator).

Block Section – the section of line between the section signal of one signal box and the Home signal of the next signal box ahead.

Block Signal – a fixed signal at the entrance to a block section, to govern trains and light running locomotives entering and using the block.

Block Station – a place at which block signals are located and from where they may be operated.

Block Switch – a switch that allows a signal box to be closed by putting the signallers at the signal boxes on both sides into through communication with each other.

Block System – maintains an interval of space between trains (see also Absolute Block).

Block System, Automatic – a series of consecutive blocks governed by automatic block signals actuated by a train or engine or by certain conditions affecting the use of the block.

Blyth & Tyne – the freight-only route to the east of the ECML between Newcastle and Morpeth, originally built by the Blyth & Tyne Railway Company.

Board – slang for a signal. Originally, railway signals were simple boards.

Bobby – traditional slang for a signaller. The original signallers were actually Railway Police Officers.

Bogie (UK) – a four or six-wheeled frame, normally used in pairs under long-bodied railway vehicles and on locomotives or individually in-between two sections of an articulated vehicle. The bogie has a central pivot point, which allows it to turn as the track curves and it thus guides the vehicle into the curve. The pivot point can be real or it can be created by links and flexibility in the suspension. There are almost as many bogie designs as there are bogies. All-welded box-frame bogies with some steering capability are currently the fashion in Europe. Good design is crucial to achieve a good ride quality, although track condition is also very important in assuring this. See also Articulation (US: Truck.).

Bolted Rail Crossing – a rail crossing or "frog" assembled from mill rolled and machined rail of bolted construction, as distinguished from solid cast crossing frogs.

Bond – cable or braid used to create the same electrical potential in two places, e.g. to link a signal mast to the rail (earth-bond) or a part of the electrification system to another part. Red bonds are used on 25kV electrification. (See also Impedance Bond.)

Bond – a financial transaction where the contractor deposits a defined sum of money with a third party (usually a bank) that is held in bond until the defined tasks have been satisfactorily completed.

Bonding – the technique or action of creating the same electrical potential in two different places.

Bowmac – a concrete panel which forms part of the road surface over the track at a level crossing.

Boxing (US) – see Hunting (UK).

Brace, Rail – a device used in points (switches or turnouts), movable crossings (frogs) etc., in combination with point bearer plates, for ensuring the correct distance between rails. Also used on rails in sharp curves to maintain the gauge & prevent overturning of the rail.

Brake Van - any vehicle with a brake compartment.

Braking Distance – the distance a train needs in which to stop (or to reduce speed) from travelling at a given speed.

Branch (Line) – track carrying trains from the mainline to destinations on lower priority routes than the mainline.

Bridge Assessment File – the file containing or referring to all relevant records resulting from the assessments carried out on a bridge.

Bridge, Ballast Deck – a bridge with a solid floor provided with drains and covered with ballast, to provide normal and uniform support for track which conforms generally to the standard construction used for the tracks where they are constructed on sub grade (roadbed). Requires more height than a bridge with slab-track or where the sleepers rest directly on the structure.

Bridge Bash – (see Bridge Strike).

Bridge, I-beam – a stringer type bridge in which the stringers are steel I-beams that directly support the track or ballast section.

Bridge Strike – a generic term to describe an incident where a road vehicle has hit the overhead structure of a rail bridge. This is a common reason for train delays as the line often cannot be re-opened until the bridge is inspected by a suitably-qualified railway employee.

Bridge Strike Nominee – a person who has been certified as competent to implement the procedures for reopening lines at 5 mph, as contained in the Rule Book Appendix ‘Bridges Struck by Road Vehicles’.

Bridge, Through Span – a bridge in which the track is carried between girders or trusses. Girder and pony truss (US) bridges (trusses without overhead braces) are called half-through spans; truss bridges with overhead bracing are called through spans.

Bridge Tie (US)- a sawed sleeper or tie usually pre-framed and of the size and length required for track on a bridge, directly resting on the structure of the bridge. Usually made from hardwood.

Britdoc – name of the company which runs a mailing system using the DX (document exchange) network.

British Rail Incident Monitoring System – computer database which provides statistical information on accidents and safety-related incidents.

British Rail International – the former arm of BR responsible for running overseas offices and selling tickets to continental destinations. Now trading under SNCF ownership as Rail Europe.

British Rail Staff Association – a national association for the benefit of all members

British Railways Additional Superannuation Scheme – provides members with the opportunity to enhance their benefits at retirement by making additional pension contributions.

British Standard – a standard published by the British Standards Institution. Its alphanumeric identity is prefixed by BS. Most British Standards are being superseded by ISO standards. [±]

Broad-Gauge Line – a track wider than the standard gauge of 4 ft 8½ in (1435mm).

Bruff – a company which built a type of vehicle capable of running on both road and rail; normally used to travel by road to aid a derailed rail vehicle or to travel to the nearest road access for a remote work site.

Buckle – failure of a rail by an inelastic change in alignment (usually as a result of compression due to elevated temperature). To lose line of track by bulging.

Bull Head Rail – an obsolete UK rail profile still in wide use whose top and bottom profiles are mirror images of each other. The rail is symmetrical with respect to the web centreline and is theoretically reversible to extend its life. The designer’s intention was that one could transpose the rails between right and left and then turn them upside down for a further two uses. Corrosion and stresses in the effective foot make this reversal impossible. See also Rail and Flat Bottom Rail. ⁺

Bump Stop – hard rubber suspension component which stops a movement close to the end of the spring travel of a lateral or vertical suspension.

Burrowing Junction – a type of junction where conflicts between trains in the opposing direction are avoided because one line ‘burrows’ under another with an under-bridge or by means of a short tunnel.

Business Management Information System – a suite of custom and off-the-shelf software being developed to manage Railtrack finance, procurement and project management, formerly known as FBMS or FBIS.

Business Risk Assessment – an assessment of the (non-safety) business risks implicit in a change proposal and associated investment plans.

Business Route Selection – commercially-based unit of route measurement which enables costs and income to be measured for defined sections of route, based on volume and type of customer usage.

Butt Weld – a weld joining two abutting surfaces by depositing weld metal within an intervening space or by melting both rail ends and then pushing them together. This weld serves to unite the abutting surfaces of the elements of a member or to join members by their elements abutting upon or against each other. Butt rail welding of one rail to another can be accomplished in-plant or on site by electric resistance fusion (Flash Butt Welding) or by an alumino-thermic process in the field.

- C -

C Change – a major business initiative launched in June 1996 by Railtrack to rationalise, clarify and standardise Railtrack processes and procedures. The primary focus is to make significant improvements in customer service and control of key activities.

Cab – the space in the power unit or driving unit of the train containing the operating controls and providing shelter and seats for the driver or engine crew.

Cab Signal – a signal installed in the driving cab of the train repeating or in lieu of lineside signals.

Cadbury Code – defines the accountabilities of the board, chairman, and non-executive directors of a company, in respect of corporate governance, internal control and financial reporting.

Cant – the term used to denote the raising of the outer rail with respect to the inner rail on curved track to allow higher speeds than if the two rails were level. Cant assists in creating the force necessary to accelerate the train laterally to traverse a curve. If a track was canted to the level required to generate the full curving force (equilibrium cant) for the maximum speed of the fastest train, a slower train could topple over. A compromise value of cant is therefore used, leading to ‘cant deficiency’ at higher speeds. Cant is what stops your coffee spilling when you go round a curve (US and Continent: Super-Elevation).[±]

Cant Deficiency – the theoretical amount by which the outer rail would need to be raised to reinstate equilibrium for a train travelling through a curve faster than the equilibrium speed. The existence of cant deficiency will result in pushing your coffee to the outside of your cup.[±]

Cant Excess – for a train travelling slower than the equilibrium speed on a curve, the theoretical dimension by which the outer rail would need to be lowered to reinstate equilibrium.

Cant Rail – the part of a vehicle or traction unit at which the profile between the bodyside and roof changes.

Cantilever – a type of overhead line support, consisting of a mast to one side of the track with supports for contact wire and catenary wire.[±]

Capex – capital expenditure (see also OPEX). Funds spent on fixed assets (e.g., the Heathrow Express infrastructure) which are not charged against company profit.

Capital Project – a project resulting in the production of a physical asset for a company.

Car (UK) – only exists in combination, e.g., rail-car. (US: any non-powered rail vehicle).

Car, Hand – a four wheeled, hand operated works vehicle for transporting staff and tools. (UK: Trolley)

Car, Motor – a motor-driven works or inspection vehicle. (UK: Powered Trolley).

Car Count Up Markers – markers provided on LUL to indicate how many cars of a train have left the platform. If the passenger emergency alarm is activated when one or more of these markers is in sight, the driver must stop the train immediately (otherwise they will override the alarm and continue to the next station).

Carriage (UK) – passenger carrying rail vehicle, also referred to as Coaching Stock. (US: Coach)

Carriage Line – a line used to move empty rolling stock / carriages only.

Carrier Drain – an impervious drain designed to carry water from place to place instead of collecting water from the surface or surrounding soil directly.

Category A Platform – a platform on LUL where the driver cannot see the entire platform train interface from the normal driving position in the cab without using mirrors or monitors. If this equipment is defective at a category A platform, assisted despatch must be provided.

Category B Platform – a platform on LUL where the driver can see the entire platform train interface from the normal driving position in the cab without using mirrors or monitors. If this equipment is defective at a category B platform, the driver can despatch the train by looking back from the cab to make sure no person or article is trapped in the doors.

Catastrophic Risks – events with a potential for multiple casualties.

Catch Point – point leading to a very short dead end or simply used to derail rolling stock attempting an unauthorised movement.

Catch Points – a pair of sprung trailing points usually located in gradients steeper than 1 in 260. Their purpose is to derail any train running back without authority or out of control. These were a requirement before all vehicles had automatic brakes. Now they are being progressively removed. Sometimes they are worked from a signal box rather than being spring operated.

Catenary – (1) the catenary wire or cable (also known as the messenger wire) carries the contact wire by means of dropper wires. The term was chosen because the catenary wire assumes more or less the shape of the curve adopted by a suspended chain or wire. (2) Generic term used for a power supply arrangement incorporating at least a contact wire and a catenary wire connected by droppers. See Overhead Line.

Catenary System – generalised term used to describe the whole overhead line equipment.

Cat's Eyes – slang term for a position light shunting or subsidiary signal.

Cattle Guard (grid) – a rail-high panel of material difficult for hooved animals to traverse, used to continue a stock fence across a railway line. See Stock Guard.

CCTV Crossing – a type of railway level crossing where the space between the barriers is checked by signal box staff by means of a CCTV camera before the train's is permitted to move past the controlling signal.

Central Door Locking – a secondary locking system retro-fitted to certain slam door trains and controlled by the guard which prevents passengers from opening the doors while the train is moving.

Centralised Traffic Control (CTC) – remotely controlled system of signals and points under which train movements are authorised by station and block signals whose indications determine the precedence of trains. The manipulation of automatic and/or cab signals and power-operated turnouts is effected from a central location where indications on panels or displays indicate the position of trains and the state of signals and points. (UK: Power Box or Integrated Electronic Control Centre IECC)

Centre Siding – a length of track laid between two running lines for the purpose of reversing trains, usually beyond a station. It allows a train to reverse direction without crossing a track carrying through trains. Sometimes referred to as a "reversing siding". (US: pocket track or turnback track).

Certificate of Acceptance – a certificate that is issued in accordance with GO/RT/3270 Route Acceptance, which requires a Certificate of Conformance to be issued for the locomotive design, construction, testing, examination and maintenance.

Certificate of Authority to Operate – a formal certificate signed and issued by the RSAB documenting the conditions under which a T&RS Route Acceptance Request has been accepted. This certificate specifies the equipment, the equipment configuration, operational requirements and limitations, route constraints and network factors within which approval has been granted for network operations.

Certificate of Technical Acceptance – the formal signed certificate issued by the RSAB confirming that a technical design proposal conforms to Network Rail technical standards for route acceptance and represents a suitable basis for development for network applications. This certificate specifies the equipment, the equipment configuration, limitations, route constraints and network factors within which approval has been granted.

Cess (UK) – the area either side of the railway immediately off the ballast shoulder. This usually provides a safe area for authorised workers to stand when trains approach. [±]

Chain (UK) – unit of length common on UK railways (80 chains to a mile, 22 yards (equalling 66 feet) per chain) [±]

Chair – the cast steel fixture on a sleeper, which secures rail (particularly bullhead rail) in the correct position. Depending on the design, of which there are many, the rail is secured to the chair by a form of clip, key or spike.

Chargehand (or Chargeman) – an obsolete job title for a train operator or infrastructure owner employee who has a supervisory role on a station platform.

Check Rail – (1) a rail laid parallel to and inside a running rail to prevent wheels from being derailed or to hold wheels in their proper alignment while crossing the stock rail. Check rails prevent wheels from striking the blades of points and the tips of crossings. (2) An additional pair of rails laid parallel to and between the running rails on bridges, bridge approaches, and in other critical locations, to keep derailed wheels on the sleepers and near the running rails. (US: Guard Rail.)

Check Rail Clamp – a device consisting of a yoke and fastening devices fixing the relative positions of the running rail and guard rail. Not all checkrails have clamps.

Chisel, track – a handheld tool to be struck by a sledge hammer, for cutting rail by scoring the base and web until breakage occurs, or for similar cutting. A rail cutter.

Circuit, Track – (see Track Circuit.)

Claims Allocation and Handling Agreement – an agreement between railway operators which empowers Railway Claims Ltd to act on behalf of the industry and its contractors for an accident or incident where a third party claim affects a number of organisations.

Clamp – a device used to secure the closed switch of a pair of points to the stock rail. Sometimes known as a clip.

Clamp Lock, or clamplock – a point operating mechanism which locks the points by directly clamping the closed switch rail to the stock rail. Normally operated hydraulically. [±]

Clamp Lock Heater – a cartridge type heater fitted to a clamp lock mechanism operating the points blades.

Class of Train

Class 0 – Light locomotive (locomotive running on its own);

Class 1 – Express passenger trains, mail trains and some emergency trains;

Class 2 – Stopping passenger trains;

Class 3 – Express parcel trains;

Class 4 – Express freight trains – 75mph maximum speed;

Class 5 – Empty coaching stock trains (passenger vehicles running empty);

Class 6 – Express freight trains – 60mph maximum speed;

Class 7 – Freight trains with 45mph maximum speed;

Class 8 – Freight trains with 35mph maximum speed;

Class 9 – Eurostar trains.

Clearing House Accounts Payable – an accounting system for financial settlement activity between Railtrack and TOCs and between TOCs¹

Clip (often called a clamp) – used to secure the closed switch of a pair of points to the stock rail, to prevent unauthorised or unintentional movement of the points.

Clip, Switch – the device by which the switch rod is joined to the switch rail. It is usually united with the switch rail by bolts or rivets. It sometimes has staggered bolt holes or similar devices in the horizontal leg for making detailed adjustments in the positions of the switch rails.

Clip, Transit (switch) – a switch-rod clip drilled with several holes in a line diagonal to the axis of the switch rod, for effecting adjustments in the throw of the switch.

Clockface Timetable – a timetable where trains run at regular intervals (e.g., every 10 minutes.)

Closed Circuit Television – often used for station security and monitoring level crossings.

Closure Rail (US) – the lead rails connecting the heels of a switch with the toe ends of a frog.

Coach – a type of railway carriage, usually with a centre aisle and two rows of seats.

Coasting – allowing a train to freewheel (on the flat or downhill) to minimise energy use. Of the 50 non stop electrified miles between London and Brighton, 29 miles can be run with the train coasting.

Coasting Allowance – additional time in a schedule to allow trains to coast part of the journey.

Code Of Practice – a statement of best practice whose use is not made mandatory by the issuing authority.

Collector Drain – see surface water drain.

Communications Based Train Control (CBTC) – a continuous automatic train control system characterised by:
(i) high resolution train location measurement, independent of track circuits; (ii) continuous, high capacity, bi-directional train-to-track RF data communications; and (iii) trainborne and wayside vital processors capable of implementing vital functions. In the UK it is known as Transmission Based Signalling (TBS). In Europe it is ETRMS Level 3.

Communications Engineer – an engineer, acting for or on behalf of Network Rail, who is competent in railway communications and who is appointed in accordance with section 2 of RT/E/P/30022.

Competent Person – a person who is passed as being qualified and has the require knowledge and skills to carry out a particular rule, regulation, instruction or procedure.

Compound Catenary – an overhead line arrangement which includes a catenary wire, auxiliary wire and contact wire linked by droppers. All three wires share the traction element (UK MK 1OLE).

Compromise Bars (US) – specially machined rails to connect rails of different section in such a way that the gauge sides and the top of the head and running surfaces are held in line. Also called offset bars.

Condition Of Track – this is a reason for a restriction below normal speed which ensures that trains pass at a safe speed over a track or a bridge or an embankment which is not currently fit for line speed.

Conductor Rail – an additional rail (or rails) provided on those electric railways where power is transmitted to trains from the track. Often referred to as the 'third rail' or 'current rail', it is normally at positive potential and is mounted on insulators to the outside of and slightly higher than the running rails. The return of the circuit is via the running rails. The current is collected by the train through 'shoes', attached to the bogies, which slide on top, along or under the rail. The continuity of conductor rails must be broken at junctions in the track to allow continuity of the running rails. Such 'gaps' may cause momentary loss of power to the train. There are cases from time to time of trains becoming 'gapped' at complex junctions, i.e. they stall over a gap and have to be rescued by another train. London Underground has a fourth rail (negative) for a completely insulated circuit. This is known as a four-rail system and the running rails are at an offset potential between the contact rails. Modern 3rd rail systems are under – pinning to allow the installation of protective (insulating) covers.

Confederation of British Industry (CBI) – Network Rail is a corporate member, therefore any designated manager is eligible to attend members' meetings.

Conicity – the taper profiled onto the surface of a railway wheel that assists guidance around curves. Usually 1:20 or 1:20 with part at 1:40.

Connect – the secure radio system used by LUL.

Consist – train formation, e.g., 'This vehicle was in the 'consist'. The sum of all vehicles in a train (for all train types).

Controlled Signal – a signal under the control of a signaller. If a colour light, it will automatically return to danger when a train has passed it.

Construction Work – maintenance, renewal, new work and commissioning in relation to the following:

- civil engineering, signalling, electrification, telecommunications, plant and electrical distribution and related computer systems;
- demolition and dismantling operations;
- waste removal resulting from demolition or dismantling.

Contact Patch – the contact area between the wheel and the rail. Normally said to be about 1cm² in size and experiencing very high pressures. See also rolling contact fatigue.

Contact (Trolley) Wire – the overhead wire, sometimes referred to as trolley wire, which the pantograph of an electric locomotive, rides against (contacts) to collect its electrical current (source of power) and which is carried by the catenary or messenger wire.

Contact Wire – hard-drawn copper, silver or (in Russia) aluminium wire, which is normally suspended from a catenary wire by droppers and is swept by the stainless steel contact strip (Japan) or aluminium contact piece (France – DC electrified lines) of the pantograph.

Contact Wire – the overhead wire touched by an electric train's pantograph in order to draw power.

Contenary – special type of overhead wire used where clearances are tight. The term is a contraction of 'contact' wire and 'catenary'.

Continuous Welded Rail – comprises rails welded together to form a single rail length over 36m (120ft), or 55m (180ft) in tunnels with a limited temperature range.

Continuously Welded Rail – a number of lengths of rail welded together to stretches of 300m or longer in a factory or permanent way yard and then welded together in a seamless manner. Expansion joints are fitted to prevent buckling.

Contract Approval Group – a committee, chaired by the Head of Procurement, that reviews and approves proposed contract strategies, and contract awards over £5m.

Contract Check – an activity which assesses the extent to which a contractor's work, procedures or systems meet his contractual obligations. This includes systems, technical and safety checks, and inspections of the contractor's activities

Contract Check Plan – a plan indicating activities, timescales and Network Rail sections responsible for undertaking individual verification of elements of all maintenance contract work coordinated and managed by the Senior Contracts Manager.

Contract Instruction – an instruction by the Employer to the Contractor relating to an activity which is included in the terms of the contract and which does not vary the contract.

Contract Strategy – the precise way in which an individual contract is organised, planned, and implemented. It will include a timetable for preparation, invitation to tender, and award of contract, with the necessary approval stages involved. It will also include key criteria for the conditions of contract, the approach to the market, the way in which available competition will be exploited, and the tender evaluation criteria.

Contract Strategy Report – a report prepared by the Procurement Manager in advance of an invitation to tender to define the strategic approach when entering the supply market and the proposed structure of the intended contract.

Contractor – a generic term used to describe a company, consultant, partnership or individual supplying works, goods or services to Network Rail.

Contractor Check Plan – the infrastructure maintenance contractor's plan for internal checking of their end product

Contractor's Assurance Case – a document specific to a particular maintenance or renewals contract in which a contractor sets out to demonstrate his intention, competence, capability, organisation, risk assessment, and safety management system to undertake the contract work or service requirements in a safe manner, formerly known as Contractors Railway Safety Case.[±]

Contractor's Core Safety Case – a set of documents specified by and provided by the contractor to demonstrate that he has the resources, skill, experience and ability to safely carry out all tasks in pursuance of his undertaking. These documents are neither project nor contract specific.

Contractor's Core Safety Case Review Panel – a panel of no more than four members set up by the Director Line Safety and composed of representatives from both the process and technical functions. Members may be chosen from Zone, Property, Project Delivery and Engineering and Production management units, as well as professional heads, engineers and specialists for resourcing the panel.

Control Centre of the Future – computerised enhancements to the facilities available in control rooms, an AEA Technology Rail project.

Control Duty Manager – the person in charge of the shift in Network Rail zone control.

Controllable Income and Expenditure – income and expenditure able to be regulated/controlled by the cost centre budget holder.

Controlled Copy – copy of an important document whose recipients receive updates whenever the document changes.

Controlled Document – a document specifying key safety, environmental, procedural or technical aspects of the work of Network Rail staff which must be made available to post holders on a controlled basis in order to allow them to carry out their duties.

Conventional Interoperability Directive – a European Union Directive which requires that national railways technical and operational standards are gradually unified.

Corrugated Rail – railhead with regularly spaced ridges and valleys at 90° to the direction of travel which can have a variety of causes, not yet fully explained.

Cost Centre – a unique identifier in the set of accounts used to collect the costs relating to the specific activities of a manager within the budget approved.

Crane, track (also called maintenance crane) – a power-operated crane used principally for positioning rails during track renewal, but having many similar uses in maintenance work.

Creep Force – the forces generated at the wheel rail interface due to creepage (see below)

Creepage – the very small relative movement between wheel and rail at the contact patch

Crib – (1) the ballast or the open space between two adjacent crossties; (2) a criss-cross structure of logs, timber, concrete or other members, used to retain a fill or as a bridge support.

Cripple Line – siding for failed trains.

Cripple Siding – track used for storing failed rolling stock.

Crippled Rail – a rail that has been locally bent by mishandling, derailment or other impact.

Criterion Based Interviewing – a technique used by suitably trained persons to select staff for appointment and posts (often used in conjunction with psychometric tests.)

Critical End Product – an end product that, in consideration of importance ranking and loss contribution, is assigned a value which is above W.

Critical Rail Temperature – the rail temperature to which continuously welded rail may be allowed to heat up before measures to protect traffic must be taken. The CRT will depend on the stress-free temperature of the rail and the quantity and degree of consolidation of the ballast.

Critical Speed – speed at which hunting continues without dying away. Above this speed hunting increases and derailment can occur.

Cross Level – difference in height of the railhead surfaces of the two rails in tangent (straight) track.

Crossing (UK) – location in a point (turnout) or diamond crossing where the wheel crosses the rail which is not leading in its direction of travel. This can be cast, fabricated or made using a combination of technologies. Requires a flange way for the wheel flange to pass through. High speed and heavy haul railways use swing nose crossings (moving frogs). (US: Frog)

Crossing Protection – an arrangement of signs or electric signalling devices designed to prevent accidents at grade crossings. May include short arm gates or full gates.

Crossing, Grade (X-ing) – a crossing or intersection of a railway line and a highway at the same level or grade. (UK term is "level crossing").

Cross-Level – the distance one rail is above or below another. This quality measurement should not be confused with super-elevation or cant in curves.

Crossover – a track providing a connection between two parallel tracks using two turnouts (sets of points). A scissors crossover provides two connections, one in each direction, with a crossing in the middle. In the UK, trailing crossovers are preferred over facing crossovers since they are perceived to be safer. A facing crossover allows a train to change to a parallel track without having to reverse.

Crossover – connection between two tracks which allows trains to pass from one to the other.

Cross-Span Wire – a wire stretched across tracks holding the OLE in its desired position.

Cross Tie (US) – the transverse member of the track structure to which the rails are spiked or otherwise fastened to provide proper gauge and to cushion, distribute, and transmit the stresses of traffic through the ballast to the roadbed. Also see Tie (US) or Sleeper (UK).

Culvert – small bridge or pipe carrying a stream under a railway or road.

Curve, Compound – a curve composed of two or more simple curves which join on common tangent points or common transition curves and which lead in the same general direction, i.e., to left or right, but each with a different radius.

Curve, Easement – see: Transition Curve.

Curve, Reverse – a curve composed of two simple curves which join at a common tangent point or by a short tangent track or a reverse transition curve, and bear in opposite directions, i.e., to left and right or vice versa. (US: Dog-Leg)

Curve, Simple – a curve in the form of an arc of a circle usually described as to its degree of curvature.

Curve, Vertical – a curve in the profile of a track to connect intersecting grade lines and to permit safe and smooth operation of trains over summits and across sags.

Curved Lead – the rail from the heel of the point to the toe of the crossing.

Cut (US) – uncoupling part of a Train. (UK) referred to the sections into which a train was broken when passing over a hump in a marshalling yard (now obsolete).

- D -

Dabbing In – enthusiasts' jargon for trespassing on the network to take photographs of trains.

Dalek – slang term for emergency speed indicator.

Datatrak – semi-automatic mechanism for reporting of train movements based on the location of multiple-unit rolling stock and subsequent translation to actual train identities/activities based on the GEMINI vehicle control system.

DB Schenker, formerly English, Welsh and Scottish Railway Ltd.

Deadhead – a locomotive hauling another. In addition, a non-revenue (non-passenger) train movement. Deadheading is a US term for empty train or light engine running. The movement of surplus personnel, usually drivers, without them performing their duties.

Deadman Device – a pressure or activity actuated alertness device to detect inattention or disability of a train driver (operator).

De-energised – Apparently Dead – electric apparatus, such as overhead wires, third rail, transformers, switches, motors, etc., is de-energised when disconnected from the normal power source, but such apparatus is deemed dangerous to life until it is known to be properly grounded.

Defective On-Train Equipment – on-train equipment that:

- is not performing its intended safety function, either fully or partly
- is isolated
- is missing

(Rule Book definition)

Degree of Curvature – a measure of the sharpness of a simple curve in which a 1deg. Curve is taken as the central angle subtended by a chord or arc of 100 feet and for which the radius is taken as 5,730 feet. Railways in the US use the chord definition – highways the arc definition.

Delegated Authority – the authority, usually expressed in financial terms, that an individual post in the organisation has to enter into the specific transaction to which the authority relates.

Delegated Budget Authority – the authority to commit expenditure within approved budgets in running the business.

Delegated Procurement Authority – the authority to act on behalf of the Head of Procurement to commit Network Rail contractually to third party suppliers of works, goods and services.

Deliverer – the management team engaged by the Sponsor to manage the day to day delivery of a project to a scope and purpose consistent with the business case provided by the Sponsor (see Sponsor).

Demand Elasticity – the proportionate or percentage increase (or reduction) in passenger demand relative to a proportionate or percentage change in an independent variable, such as car ownership or train service frequency.

Departmental Advice (Blue) – used for publishing the Sandite programmes worked by TASC units (see TASC).

Depreciation – the charge reflected in the financial accounts for the use and replacement of fixed assets.[±]

Depth, Ballast – the depth from the bottom of the sleeper or tie to the top of the sub-ballast or sub grade. The ballast between the ties (in the cribs) is a part of the ballast section but its depth is not a part of the specified ballast depth.

Derail – a track safety device to guide non-authorised train movements off the rails at a selected spot, as a means of protection against collisions or other accidents. Modern day equivalent for catch-points in areas with slow moving traffic. Usually linked to a point giving access to a main line or through track.

Derailer – a device for an exit from a siding or bay platform that derails an unauthorised movement, so protecting the adjacent line.

Derailment – anytime the wheels of a rail vehicle are off the head of the rail and on the ground. Caused by collisions, mechanical failure, gauge spreading or flange climb.

Detection – proof that points are correctly set (and usually locked) in the “Normal” or “Reverse” position. Correct detection must be obtained before the protecting signal can be cleared.

Detonator – a small disc shaped warning device, designed to be placed on the railhead for protection and emergency purposes. It explodes when a train passes over, thus alerting the driver. Detonators are being phased out. Correctly known as a fog signal.[±]

Diagram – the planned movements for a set of rolling stock (e.g., a train, a multiple unit) for a day or any other period and involving several journeys, generally with different service (train) numbers.

Diamond Crossing – arrangement of a line where one track crosses another, without connection, at an angle of less than 90°, at grade. Named after the pattern formed by the rails.

Diesel Multiple Unit (DMU) – (see multiple unit.)

Differential Global Positioning by Satellite (DGPS) – navigation based on signals received from four or five satellites with a correction factor received from a fixed position reference transmitter via terrestrial FM.

Direct Fixation Track – a system to attach rails directly to a solid, non-ballasted surface. (UK: Slab Track).

Direct Rail Services – originally, the freight operating organisation of British Nuclear Fuels. Now a medium sized freight operating company, active in coal traffic and infrastructure maintenance supplies.[±]

Direct Traffic Control (DTC) – system of traffic control with sections of track identified with clear boundaries, where permission to proceed is granted remotely by a dispatcher. Ordinarily, only one train may occupy a DTC block at a time. Similar to train warrant control (TWC) except that the section entry timings are fixed by timetable rather than granted case by case. DTC may be used in conjunction with track signalling in APB, ABS, or over “dark territory”.

Disability Discrimination Act (DDA) – legislation requiring providers of services that are made available to the general public take into account the needs of people with disabilities. Part 3 of the Disability Discrimination Act (DDA) came into force on 1st October 2004 and requires every business, large or small, from the local shop to restaurants, health clubs, dentists and supermarkets, to become more user-friendly for Britain’s 10 million disabled people. The law means that businesses will need to make reasonable changes, such as adapting premises, removing physical barriers or providing the service another way, so that disabled people can use the service. Failure to act can result in legal action. This legal requirement has been anticipated by the railway industry and has caused substantial cost increases.

Disaggregation – the splitting of plans and expenditure into different headings and activities.[±]

Displaced Asset – an asset owned but no longer in use.

Distant Signal (AU, CH, D etc.) – fixed signal which indicates the state of the main signal on the approach to a block signal, station entry or exit signal etc. It will not convey information as to conditions affecting the use of the track between the distant signal and main signal. Distant signals are necessary where a train driver can not react fast enough once he or she sees the main signal. Often combined with the previous main signal.

Distant Signal (UK) – fixed signal outside of a block system, used to indicate the state of the main signal on the approach to a block signal, interlocking signal or switch point indicator. It does not convey information as to conditions affecting the use of the track between the distant signal and block signal, interlocking signal or switch point indicator with which it is associated. The distant signal does therefore not include a red or stop aspect. When “on” it is a warning that the next aspect could be red. Distant signals are necessary where train drivers cannot react fast enough once they see the main signal. It is identified by a “D” marker (UK). [±]

Division Point (US) – one of a number of sections of a large railway, run as an independent entity to the extent of having its own fleet of locomotives, engines, repair shops, officials, and clerical and operating personnel. Sometimes only refers to the management of part of the infrastructure. (UK: Area)

Document Control Point – a nominated location where the person in charge will receive controlled documents, allocate controlled copy numbers, register them, acknowledge receipt and pass them to each addressee. The person in charge will also register outgoing documents, and ensure receipts are received from each addressee.

Dog-Leg (US) – railway parlance for a sharp reverse curve in the track. The term's basis is the comparable crooked appearance of a dog's hind legs. (UK: reverse curve)

Dolly – slang term for a shunting signal in ex LNER terminology. Sometimes also known as a “Dod” or “Tommy Dodd”.

Dolly, Rail or Timber (US) – a device consisting of one or more wide rollers mounted in a frame, used as a platform and as a truck for moving rail, long heavy timbers, and other items. (UK: Trolley)

Double Block Working – a process where two block sections (rather than one) must be clear before allowing a train to proceed. Originally used on the main lines during fog working, it is currently used on LUL between Amersham and Moor Park during the leaf fall season due to rail adhesion problems.

Double End Electrical Section – a section of conductor rail or overhead line fed from two points.

Double Ending – a process for reversing trains whereby an assisting driver joins the train in the rear cab before proceeding to a reversing point. This person then drives the train back to the other platform where the original driver leaves the train. Used on LUL to speed up reversing moves by eliminating the need for the driver to ‘change ends’.

Double Yellow Aspect – a preliminary cautionary signal in four aspect signalled territory, informing the driver to expect the next running signal to be at single yellow.

Double-Ender (US) – a locomotive able to run in either direction. Most European locomotives are of this type, unlike US ones which often run in back to back pairs.

Down Line – rail line taking trains away from London or another major city (generally). However, there are exceptions, for example, Up to Cleethorpes and Up to Hull from Seamer West.

Drill, Track – a machine designed to operate horizontally to drill holes through the webs of rails, especially for track bolts. It may be a one-man ratchet drill or a geared drill machine with a frame, rail clamps, feed screw, high-speed steel bit and chuck.

Driver Only (DO) Train – a train that is worked only by a driver and does not have a guard.

Driver's Reminder Appliance (DRA) – device in a driving cab that allows the driver to set a reminder that the signal ahead is at danger. While the DRA is set, the driver cannot take power.

Driver's Safety Device – device in the driving cab of rolling stock that will stop the train if the driver becomes incapacitated. Popularly known as the “Deadman's Pedal” or Deadman's Handle”.

Driving Van Trailer – an unpowered van fitted with a driving cab from which a locomotive at the other end of the train can be controlled, thus enabling push-pull working.

Dropper – stainless steel or galvanised steel wire supporting the contact wire from the catenary wire and linking the two electrically. Fixed to the contact wire with clips.

Dual Gate – electronic means of monitoring two selected regions of the timebase of an ultrasonic flaw detector.

Dual Voltage Locomotive (Train) – locomotive or multiple unit train designed to operate over lines having two different electric traction power supply systems. Locomotives have been designed to operate with up to four different voltages covering both AC and DC systems. Some trains can operate on lines with either overhead or third rail current collection, as in the case of Eurostar Trains and UK Class 92 Channel Tunnel locomotives

and some North East Corridor trains in New York. Eurostar trains can handle 750Vdc (England) 1500Vdc (Holland + France), 3000Vdc (Belgium) and 25kVac (Belgium and France).

Dummy – slang term for a shunting signal, ex LMS terminology.

Dwell Time – the time a vehicle or train spends at a station or stop to allow passengers to board and alight, measured as the interval between time of stopping and starting.

Dynamic Braking – a train braking system using the traction motors of the power vehicle(s) to act as generators with the energy dissipated in brake resistors (rheostatic braking) or supplied to other trains via the supply system (regenerative braking).

Dynamic Track Stabiliser – a self propelled on-track machine for consolidating track ballast by inducing high frequency vibration into the ballast through the rails and sleepers. This treatment allows resumption of operations at line speed after a maintenance intervention (tamping etc.). [±]

- E -

Early Rationalisation of Signalling – Railtrack's accelerated programme of closing small signal boxes and concentrating work at fewer, larger signal boxes.

Easement Curve – (see Transition Curve.)

Economical Facing Point Lock – a mechanism that enables the movement of points and the facing point lock plunger to be operated by the same lever.

Egret – a performance management information system with downloaded information from PHIS.

Elastomer – a material made substantially from natural or synthetic rubbers.

Electric Multiple Unit (EMU) – the generic term for an electrically powered suburban or metro train where a separate locomotive is not required because the traction drive and control system is contained under or in the roof space of various cars in the train (see also multiple unit).

Electrical Control Room – responsible for control of current in the overhead lines. On the LNE zone, located at Hornsey and Doncaster, with Cathcart controlling Alnmouth – Berwick.

Electrical Control Room Operator – the person in charge of a shift in the Electrical Control Room.

Electrification – a term used to describe the installation of overhead wire or third (or 4th) rail power distribution facilities to enable operation of EMU trains or trains hauled by electric locomotives.

Electrified Territory – that portion of the railway consisting of main tracks, secondary tracks, sidings, yards and industrial tracks equipped for electric train operation by overhead line system or by third rail and necessary substations, transmission and signal power lines located above or adjacent to the tracks.

Electro Magnetic Interference – interference in the signalling system caused by inductive coupling with traction motors, transformer stray fields, radio waves being generated by electronic equipment etc.

Electromagnetic Compatibility – the ability of electronic devices to function satisfactorily in the presence of magnetic and electric fields.

Electronic Data Interchange – a computer network enabling suppliers and customers to pass orders, invoices, and payments electronically.

Electronic Train Recording – computer equipment installed in signalboxes where automatic TRUST reporting is not operative, to allow the signalman to record train passing times. Now known as Simplified Direct Recording (SDR).

Electronic Train Register Book – being installed in manual signalboxes to replace the old manual train register. A PC based system.

Elevation (US) – height of outer rail in a curve: See Superelevation.

Emergency Restriction of Speed – a reduction of normal speed which has to be applied in an emergency.

Encapsulation – the bonding of insulating material to a metallic fishplate core under workshop conditions prior to the manufacture of a joint.

End Post – block of insulating material in the shape of the rail cross-section used to separate, electrically, rail ends from each other (also known as ‘biscuit’ in Scotland).

End post – the piece of an insulating rail joint which separates the rail ends.

Energised-Live (Dangerous to Life) – electric apparatus, such as overhead wires, third rail, transformers, switches, motors, etc., that is energised when connected to the normal power source. All systems are considered to be energised until a qualified individual establishes that the circuit has been de-energised and has applied a secure link to earth.

Engine Burn (US) – destruction of railhead metal caused by spinning locomotive wheels. Engine Burn Fracture is a rail break caused by an engine burn.

Engineering Hours – on LUL, the period when traction current is switched off at night and no trains run.

Engineering Safety Management System – the management system that was employed by Railtrack EE&CS to ensure best current safety management practice.

Engineering Supervisor – a person in charge of a worksite within a possession.

Engineering Train – train operated in connection with engineering or maintenance work. Includes an on-track machine.

English, Welsh and Scottish Railway Ltd – the company formed when the three heavy haul rail freight companies (Loadhaul, Mainline and Transrail) together with Rail Express Systems, were taken over by Wisconsin Central Railroad Company; now DB Schenker. [±]

Environment – surroundings in which an organisation operates including air, water, land, natural resources, flora, fauna, humans, and their interrelation. Note: surroundings in this context extend from within an organisation to the whole system.

Environmental Impact – any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organisation’s activities, products or services.

Environmental Impact Assessment – the ongoing identification of environmental factors to determine the past, current and potential impact (positive or negative) of an organisation’s activities on the environment. This process includes the identification of the potential regulatory, legal and business exposure, as well as health and safety impacts and environmental risk assessment.

Environmental Management System – the part of the overall management system that includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

Environmental Policy – a public statement of the intentions and principles of action of an organisation regarding its environmental aspects, giving rise to its objectives and targets.

Environmental Statement – a document setting out the results of an environmental impact assessment. It consists of three parts:

- main study findings;
- technical appendices;
- non-technical summary.

Equilibrium Speed – the speed of a train travelling through a curve where the passenger experiences no lateral force, whether to the inside or outside of the curve, the speed at which there is neither cant deficiency nor cant excess.

Equivalent Fatalities – all fatalities and injuries expressed in terms of fatalities where 10 major injuries equal 1 fatality and 200 minor injuries equal 1 fatality.

Equivalent Million Gross Tons Per Annum – a measure of the damage effect on the track caused by different types of trains running at different speeds and with different axle loads.

EROS – (1) Emergency Restriction of Speed: a reduction of normal speed which has to be applied in an emergency or (2a) Efficiency by the Rationalisation of Signalboxes and (2b) Early Rationalisation of Signalling, Railtrack’s accelerated programme of closing small signal boxes and concentrating work at fewer, larger signal boxes. [±]

ETH-Index – The Electric Train Heating Index states the power which a head-end power unit must supply to a railway carriage for “hotel-purposes”, that is heating and air conditioning etc. Also, the capacity of the head-end unit to supply this power.

Ethernet – computer network system.

Ethylene Vinyl Acetate – a high density polyethylene modified by the addition of vinyl acetate.

European Integrated Railways Radio Enhanced Network (EIRENE) – pan-European development project for a train radio system suitable for transmitting the information required by ERTMS. Uses GSM in the 900MHz band allocated to railways.

European Rail Traffic Management System (ERTMS) – high level set of standards to allow interoperability and effective management of Trans European railway operations. Previously, there was no distinction between the management aspects and the technical solution, European Train Control System (ETCS).

European Train Control System (ETCS) – the signalling equipment aspect of ERTMS with its three levels of train control. The Level 1 is effectively a standardised ATP system with line side signals. Levels 2 and 3 require output from project EIRENE to assure transmission of movement authority by radio.

EuroSPIN – European Seamless Passenger Information Network: an EC funded project led by W S Atkins to develop an intelligent system which provides up-to-date, multi-modal passenger transport information to the public.

Examining Engineer – a person who is competent in the examination, assessment and maintenance of bridges to the satisfaction of the Route Civil Engineer.

Executive Grade – old style executive job grading system.

Expansion Joint – a joint provided in CWR to allow rails to expand and contract as the temperature changes without buckling or rail breaks occurring.

Expansion Shim (rail) – spacer inserted between ends of abutting rails while track is being laid to provide allowance for the expansion of the rail steel when the temperature changes.

- F -

Facing Point Lock – a device to ensure that points that allow trains to change route without reversing are locked in position.[±]

Facing Points – points where two routes diverge in the direction of travel [compare with trailing points].

Fail Safe – design philosophy which results in any expected malfunction or failure maintaining or placing the equipment in a safe state.[±]

Fares Elasticity – the proportionate or percentage increase (or reduction) in passenger demand relative to a proportionate or percentage change in fares.

Faregate (US) – part of an automatic fare collection (AFC) system where the device is placed at station entrances and exits to regulate access by reading a ticket inserted by the passenger and restricting access if the ticket is not correct. Various types are in use around the world to prevent passenger fraud and to permit the handling of large numbers of passengers with a minimum of staff. (UK: Ticket Barrier / Ticket Gate)

Fares Incentive Adjustment Payment – a modification to the fare cap to take into account the punctuality and reliability achieved by the TOC.

Fares Increase Regulatory Mechanism – a computerised system commissioned by OPRAF to check TOC compliance with the fare capping regime.

Fastener, Tie-Plate – a special tie-plate long enough to support the bases of a guard rail and the adjacent running rail and with a rail brace riveted to it for supporting the guard rail.

Fastenings, Auxiliary Track – spring washers, tie plates, rail braces, rail anchors and other accessories.

Fastenings, Track – a term commonly applied to splice bars, bolts, clips and spikes.

Fault Reporting and Monitoring of Equipment System – allows operators in Fault Control to record Signals & Telecommunications faults.

Feasibility – a structured process that identifies the engineering options and their implications including environmental issues. It culminates in a feasibility report and a design development proposal.

Feasibility Study – a structured process that identifies the engineering options and their implications including environmental issues. It culminates in a feasibility report and a design development (and, sometimes, implementation) proposal.

Feather – slang term for the row of five white lights mounted at an angle above a (cleared) colour light signal to give an indication of the route set.

Feeder Station – a building or compound containing electrical switch gear and equipment to which main supplies from an electricity company are brought and from which the OLE or third rail is supplied.

Field Reporting Procedures – the instructions issued on how to report to TOPS for any particular location.

Finance and Business Information System – a homonym of FB MIS and which is now known as BMIS.

First Filament Failure – this refers to a failure in a signal lamp, which has more than one filament for enhanced availability. The bulb must be replaced, but the signal still works normally and cautioning of trains is not necessary.

Fish Plate – device to secure the ends of two rails together (in jointed track).

Fish Plate – shaped and drilled (4 or more holes) steel plate used to link two rails. Fishplates are bolted to the rail ends by using the space in the web of the rail of jointed track. [±]

Fishing Space (US) – space between head and base of a rail occupied by a splice bar (angle bar, joint bar).

Fishing Surfaces – inclined surfaces under the railhead and above the rail foot that allow the fishplate to perform its function of aligning the adjacent pieces of rail.

Fitted – vehicles on a train which have the continuous brake operative.

Fitted Head – the portion of a freight train which is fitted with a continuous brake. The wagons in the ‘fitted head’ are marshalled at the front of the train immediately behind the locomotive. There must be sufficient vehicles in the ‘fitted head’ to provide sufficient brake force to stop the train (largely obsolete).

Fixed Asset – an item by the use of which the company generates income. This may be a tangible asset or an intangible asset, such as software.

Fixed Distant Signal – a distant signal that is only capable of displaying a caution.

Fixed (Signal) – (1) a signal which is incapable (permanently or temporarily) of being cleared; (2) a lineside signal which is always there – as opposed to a (portable) hand signal.

Flagman (US) – the rear brakeman. The great country music singer Jimmie Rodgers used to brag about being a *flagman*. Reason? Because flagmen had to know how to read so they could understand train orders.

Flaking – one of the consequences of rolling contact fatigue, resulting from the propagation of cracks underneath and parallel to the surface of the rail head or running surface of the wheel. The phenomenon is more pronounced on rails where the traffic is predominantly in one direction. Railhead damage takes the form of pieces of the rail or tread surface becoming detached or being torn off. The severity of the damage caused by flaking is generally felt to be less than that associated with shelling and spalling. However, this is a largely qualitative form of differentiation.

Flange – raised part of the rolling surface of the wheel used for guidance in tight curves and when travelling through the crossing parts of turnouts (points) without a moving frog (see also: wheelset.)

Flange Way – space in the crossing of a turnout (points) or diamond crossing that allows the flange of the wheel to cross the stock rail. Space between the running rail and guard rail or the decking (timber or proprietary design) in road crossings to provide clearance for the passage of wheel flanges.

Flank Protection – a means of protecting against a conflicting move by setting points to divert trains away from the point of conflict.

Flare Opening (US) – horizontal distance between the gauge line of the running rail and the side of the head of a guard rail or crossing wing rail at the widest part of its flared end.

Flat – the railway equivalent to a puncture. Damage caused to the surface of a wheel, normally the result of sliding or skidding; can only be corrected by using a wheel lathe to restore the correct shape.

Flat Bottom Rail – rail which is used in all modern track relaying.

Flat Junction – a type of junction where tracks cross on the level, such that opposing trains may have to await a train leaving the main line (also known as at-grade junction).

Flexibility Premium – a percentage allowance paid to Relief Signalmen and Crossing Keepers to compensate for their travelling to and from places of work and the unpredictability of shifts.

Floating Slab Track – a track system using a concrete base mounted on rubber pads or resilient mats to reduce noise and vibration transmission to adjacent properties. Some systems use steel and rubber spring suspended floating slabs to facilitate later changes.

Flow of Metal (rail) – rolling out of steel on the crown of a rail toward sides of the head. More common on the low side of a canted curve, located where trains travel frequently at less than balancing speed. (UK: Lipping)

Flow Separation – loss of continuity of airflow along parts of the train's outer surface.

Flying Junction – a type of junction where conflicts between trains travelling in opposing directions on a multiple track railway are avoided because one line 'flies' over another on a bridge or viaduct.

Fog Object – an object which, if not visible from the signal box, will mean that fog working must be introduced (absolute block lines).

Fog Signal – (see detonator.)

Formation – material provided between the ballast and the subgrade to either increase or reduce the stiffness of the subgrade, or to prevent overstressing the subgrade. Some use the term to describe embankments and similar structures which are not part of the pre-existing ground. [±]

Four Foot (UK) – the space between the running rails measured from the edge of the baseplates underneath the rails (rail chairs). The most dangerous place to be on a railway.

Four Rail System – a now almost unique current collection system used by London Underground which has separate positive and negative current rails. The same system was used by the LNWR and the Mersey Railway at one time. The usual 3-rail method of conducting the return current via the running rails is replaced by a fully insulated system using separate positive and negative rails. Originally used to reduce the risk of stray currents causing damage to nearby utilities and structures through electrolysis. The system has the disadvantage of requiring special fault detection as earth faults do not cause current to switch off automatically (see also: conductor rail).

FRA – Federal Railroad Administration: An agency of the U. S. Department of Transportation with jurisdiction over matters of railway safety and research.

Fracture, Detail – a progressive transverse fracture originating in the head of a rail, caused by inclusions in the original metal. Cleaner steels means this flaw is on the decline. (UK: Tache Oval)

Franchise – an agreement between the Franchising Director and a train operator to run particular passenger services for a defined period.

Franchise Director – officer appointed under the Railway Act 1993 to franchise passenger services.

Fredy – a device for detecting trains approaching level crossings without the use of a treadle. Unfortunately, vulnerable to leaf contamination, and so being replaced by treadles.

Freight Upgrade – an initiative to secure future freight revenue and to protect passenger revenue, through infrastructure gauge improvements and routing strategy, particularly on the WCML.

Frog (US) – a track structure used at the intersection of two running rails to provide support for wheels and passageways for their flanges, thus permitting wheels on either rail to cross the other. (UK: Crossing)

Frog Angle (US) – angle formed by intersecting gauge lines of the rails, or by tangents to the gauge lines at their point of intersection when the frog is curved. (UK: Crossing Angle)

Frog Number (US) – one-half the cotangent of one-half the frog angle, or the number of units of centreline length in which the spread is one unit. The rate of spread of the gauge lines at the frog. The number of units of length for a spread of one unit.

Frozen Joint – a joint so tight that the rails cannot move as temperature varies.

Fuel Oil – diesel and other similar hydrocarbon based oils used as a fuel for train motive power, available in different grades, e.g., light and heavy.

- G -

Gain – amplification [especially of a signal].

Gangway – flexible structure provided at vehicle ends where necessary to provide access from one vehicle to another. The gangway is divided between the two adjacent vehicles and is normally closed off when the vehicles are uncoupled.

Gas-Turbine Electric Locomotive – a power unit in which a gas turbine drives electric power, normally alternators supplying current to electric traction motors on the axles.

Gauge – the distance between the inner running faces (gauge lines) of the two rails, on the same track. Also used to describe the “envelope” through which trains’ profiles must fit – this is the structure gauge (US-spelling “gage”).[±]

Overview of Common Track Gauges:

Broad gauge (Spain):	1674 mm	5'5 9/10 th "
Broad gauge (Portugal):	1665 mm	5'5 11/20 th "
Broad gauge (Ireland):	1600 mm	5'3"
Broad gauge (Finland):	1524 mm	5' exactly
Broad gauge (former USSR):	1520 mm	5'
Standard gauge (World-wide Application):	1435 mm	4'8 1/2"
Narrow gauge (Cape gauge – Africa, Japan):	1067 mm	3'6"
Narrow gauge (meter gauge):	1000 mm	3'3 37/100"
Narrow gauge (Latin America)	950 mm	
Narrow gauge (Austria):	750 mm	

Gauge Line – a line five-eighths of an inch, about 15mm below the running surface of a rail on the side of the head nearest the track centre; the line from which measurements of gauge are made.

Gauge, narrow – (see Narrow Gauge.)

Gauging (of track) – bringing two opposite rails into their correct relative positions as regards to their distance apart.

Gemini – a system for resource control of multiple-unit trains.

Gemini for Non Integrated Unit Stock – a Windows front-end facility for Resource Controllers to manage the day to day operation of their fleets. Adopted by Virgin Trains. Users of GENIUS withdraw from TOPS/POIS/EDTA.

General Purpose Radio System (GPRS) – implementation of PSS using mobile radio communications.

General Utility Van – a type of parcels van, some of which were converted by Railtrack for leaf fall track clearance.

Generalized Cost – an index of hassle or disutility which forms the basis of transport planning by providing a theoretical understanding of how passengers react to different aspects of end-to-end journeys. The GC includes access time, waiting time, scheduled journey time, delays, the number of interchanges, fares and quality variables.

Geographic and Infrastructure Systems (GEOGIS) – a major database of railway infrastructure assets containing information on the physical location of track, buildings and structures.

Geographic Information System (GIS) – high quality database for assets using exact geographic information for object location, in most cases referenced to a national grid system. It may include full mapping information. Generally of a relational type and based on a standard software such as ORACLE or ARCINFO.

Global Positioning by Satellite (GPS) – navigation based on measuring time delays of signals received from four or five satellites. See also DGPS.

Global System for Mobile Communications (GSM) – internationally agreed standard and protocols for mobile radio (telephone type) communications using cellular arrangements to maximise use of the frequency spectrum. European standard.

Global System for Mobile Communications for Railways (GSM-R) – specialised GSM cellular Personal Mobile Radio (PMR) implementation for railways using the 900MHz band and with a higher level of reliability and safety and more features than GSM.

Goods Line – a line which has not been signalled to the standards required for running passenger trains.

Grade – US term for sloping track. UK terms are gradient or "bank". "At grade" means level track.

Grade Crossing (US) – (see level crossing.)

Grade Line (grade) – (1) the line of a profile representing top-of-rail elevations of the track. (2) A series of staked elevations transferring this line to the ground or roadbed.

Grade Rail – the rail first surfaced to track elevation; the line rail on tangent track, the inner or low rail on curves.

Grade Separation – a term applied to the use of a bridge structure and its approaches to divide or separate the crossing movement of vehicular, pedestrian or other traffic, by confining portions thereof to different elevations. See Flyover and Dive under.

Green Zone – an area of protection for workers, which separates work on the railway line from train movements. The simplest way of arranging such a zone is to stop movements of all trains on all lines at the location concerned. Fencing off the work area may be an acceptable alternative but requires reduced speed operation..

Gricer – slang term for a train enthusiast.

Gricex – slang term for a special train, often a steam special. The word is derived from 'gricer' and 'x' meaning excursion.

Gross Project Code – records the full amount of income invoiced by a business unit to a customer prior to allocating income to the interunit account code of the appropriate business unit.

Ground Disk – small shunting signal at low level (often called a "dolly" or a "dummy").

Ground Frame – a small lever frame to operate points and signals, usually mounted at ground level. Sometimes a small switch panel which works little used connections at locations remote from a signal box. local operation is only possible when the signaller at the controlling signal box gives a release (as per Rule Book definition)

Ground Position Light – a low level shunting signal displaying lights rather than a disc.

Group Standard – a document published by the Safety and Standards Group of Railway Safety as a Railway Group Standard or a Railway Group Code of Practice.

Guard – Senior Conductor, Conductor or Train(wo)man.

Guard Rail (US) – (see also: Check Rail.)

Guideway (UK) – running surface with mechanical or electrical guidance function for non-rail guided transport.
(US) – Supporting structure for a rail track.

- H -

Hackwall (US) – the section of wall rising from the surface of an abutment.

Hand Points – turnout (points) which is worked manually by an adjacent independent lever.

Handite – Hand Held Sandite Applicator (a trade name used by Chipman Rail).

Harm – means harm to the health of living organisms or other interference with the ecological systems of which they form part. Also, in the case of man, includes offence caused to any of his senses or harm to his property. Harmless has a corresponding meaning.

Hazard – situation with potential to cause harm or loss.

Hazpak – training course for drivers of vehicles carrying dangerous substances in packages.

Head Block (switch) (US) – a pair of ties (or, in old types of turnouts, a single tie) used to support the switch points operating mechanism and the switch stand.

Head Code – an obsolete term for the Train Reporting Number. The headcode is a unique code to identify each train; it is made up from the Class of train, followed by its destination; and finally its number designated by

track access (eg. 1A30 = a Class One express train, travelling towards London, No. 30). The range of letters used in the train reporting numbers are too detailed to list here.

Head Rod (US) – the switch rod nearest the toe of a switch, usually placed between the two head block ties.

Head-End Power – a system of furnishing domestic electric power (hotel power) for a complete railway train from a single generating plant in the power unit, excluding traction power.

Headspan Wire – a wire suspended across the tracks and from which the OLE is suspended.

Headway – the time interval between the passing of the front ends of successive multiple units or trains moving along the same lane or track in the same direction.

Heater, switch – a device for melting snow at switches by means of steam, an electric current, gas jets, or oil.

Heat Treated Rail – rail subjected to accelerated cooling or other heat treatment after rolling with the intention of achieving specified mechanical properties.

Heavy Haul Railway – large capacity train haulage of bulk commodities. Normally uses unit train format.

Heavy rail transit – a mode of rail rapid transit generally characterised by high passenger carrying capacity, fully grade-separated construction, operating on exclusive rights of way, and station platforms at the floor level of the vehicles.

Heavy rail vehicle – a vehicle operating on a heavy rail transit system. Typically, electrically propelled, bi-directional, capable of operating in multiple unit, and designed for rapid, high-level boarding and discharging of passengers.

Heel Block (switch) – a block which spans joints and fills the space between adjacent rails at the heel of a switch, joined with outside splice bars by continuous bolts to form a unit joint. Also serves as a foot guard.

Hertzian Contact – the pressure distribution in the contact patch.

Heterogeneity (of Rail Mode) – synonym of ‘diversity’ in terms of types of equipment, design life and equipment age on the railway network.

High Speed Interoperability – requirement placed on high-speed rolling stock and operational practice to allow cross border operation without locomotive and new changes.

High Street Environment – a worksite outside the area of an Infrastructure Manager’s (Network Rail’s in Britain) Controlled Infrastructure and which may not impinge upon railway operations

Highway-Crossing Protection (US) – an arrangement of one or more highway crossing signals, with or without gates, to protect highway traffic. (UK: level crossing protection)

Hollow Bearer – bearer (Sleeper), fabricated from steel or cast, with space internally to accommodate switch drive mechanisms and detection devices. Can also be used to route cables across a track.

Home Signal – the first stop signal on the approach to a (non Track Circuit Block) signalbox. See Track Circuit Block. [±]

Hot Axle Box Detector / or Detected – this is a trackside temperature detector, which warns a signal box of an overheated bearing; as it counts the passing wheels and indicates which axle is faulty, if one axle or wheel is hotter than the others on the train.

Hotel Power – that part of a train’s power consumption which is needed to power air conditioning, lighting, heating and kitchen facilities on a train. Often greater than 10-20% of the total energy requirement.

House Track (US) – a track alongside of or entering a freight house; used for cars receiving or delivering freight at the house. (UK: industrial sidings)

Human Resources System – a computer system replacing NPS and PEARLS.

Hunting (UK) – the sinusoidal oscillation of a bogie or wheelset at speed caused by wheelset conicity and yaw stiffness and initiated by irregularities in the track or wheels. Different designs "hunt" in different ways and under different conditions. Below a critical speed, the oscillations decay away. Above the critical speed the oscillations increase, and this can have a damaging effect on rails or may lead to the train being derailed. Suspension design often affects ride as much as anything and the whole science of bogie design can be a bit of a black art. (US: boxing)

Hydro-pneumatic points – a form of train operated points that are continuously driven to one position hydro pneumatically such that facing movements always pass through them in the same direction. Trains themselves operate the points in the trailing reverse direction.

- I -

IECC System Monitor – a facility for reporting errors to the Integrated Electronic Control Centre.

Impact Coefficient – an enhanced loading designed to simulate occasional exceptional or accidental loads to which a sleeper may be subjected in service

Impedance bond – an electrical circuit installed at points on the track where track circuit frequencies or codes change in electric traction areas to separate signal and traction current. (See also: Bond)

Implementation – the undertaking of physical works to deliver the detailed design.

Improved Manufacturing Performance through Active Change and Training (IMPACT) – a Westinghouse partnership initiative.

In Advance Of – before the object being discussed in the (normal) direction of travel.

In Multiple – refers to a traction unit or units which have through control, and are worked by a driver in the front cab of the leading vehicle.

In Rear Of – beyond the object being discussed in the (normal) direction of travel.

In Service – a train is in service from the time it starts its journey to the time it completes its journey. A vehicle is in service when it forms part of a train which is in service.

In Tandem – refers to a traction unit or units where each is controlled independently (a driver is provided on each).

Incident – an unplanned event which, under different circumstances, could have resulted in:

- physical harm, injury or disease to an individual;
- damage to property;
- a near miss;
- loss;

or any combination of these effects.

Insulated switch – a switch in which the fixtures, principally the gauge plates and the switch rods connecting one rail to the other, are provided with insulation so that electric currents will not be shunted. Also, the turnout rail must contain an insulating joint.

Insulating rail joint – sometimes called Insulated Joint. A rail joint designed to stop the conduction of electric current between two lengths of rail, as at the end of a track circuit. Normally consists of insulated fishplates, end post and insulating sleeves for the rail bolts.

Integrated Electronic Control Centre (IECC) – train control centre (power signal box) with responsibility for a hundred or more route km where all data displays and most safety interlocking are computer controlled. Many functions are carried out automatically using train describers and automatic route setting (ARS) based on TRUST Train Ids. Operators are only involved in situations where there is disruption. IECCs exist at London Liverpool St., Merseyside, Tyneside, York and elsewhere. [±]

Integrated Transport Authority (ITA) – committee of elected councillors which supervises public transport provision in a PTE area (formerly PTA, Passenger Transport Authority).

Interfrigo – an operator of privately owned refrigerated wagons. ^{and}

Interlocking – in signalling, a system to prevent the setting up of conflicting routes by logically linking points and signal operation. At first interlocking of actions was achieved mechanically through the locking frame, then electro-mechanically by relays in the signal box. Now, interlockings are largely computerised using a two in three voting system, diverse hardware and software or protocols. Also note the term SSI (solid state interlocking). Computer hardware and software must be safety approved. In the US, the term Interlocking refers to an area where junctions and signals are under the control of a signal cabin or "Tower". [±]

Intermediate Block Home (IBH) Signal – stop signal controlling one exit from the section in the rear into the block section ahead, originally at an intermediate section signal box. [±]

Intermediate Block Section – a track circuited section of line between the section signal and the Intermediate Block Home Signal, both of which are worked from the same (Absolute Block) signal box.

Intermittent ATP (I-ATP) – system of automatic train protection where trains receive information from the trackside at regular intervals. In between these fixed locations, trains cannot receive any updates.

Intermodal Car – a rail wagon designed specifically for handling piggyback trailers or containers, or both.

Intermodal Traffic – freight moving via at least two different modes of transport, e.g., truck-to-rail.

Interval – the actual difference in time between trains.

Invitation To Tender – a collection of documents issued to one or more potential suppliers or contractors to invite commercial bids to undertake specified tasks.

Iris – a test coach operated on the railway to test the strength of radio signals received via the National Railway Network Radio system.

- J -

Jerk – the rate of change of acceleration with time. Units are mass per time cubed. Passenger comfort criterion. Maximum level allowed in the UK is 0.7m.s^3 .

Joint – the junction of two rails or of like materials in bridge members.

Joint bar (US) – a steel angle bar or other shape used to fasten together the ends of rails in a track. They are used in pairs, and are designed to fit the space between head and flange (fishing space) closely. They are held in place by track bolts. Also, called angle bar, rail joint bar, and splice bar. (UK: fishplates)

Joint Industry Cost – costs incurred by Network Rail on behalf of customers and “passed through” to them.

Joint Line – the route from Doncaster to Peterborough via Lincoln and Spalding; its title when built was the Great Northern and Great Eastern Joint Railway.

Jointed Rail or Track – a method for joining lengths of rails with steel members (fish plates) designed to unite the abutting ends of contiguous rails. Normal length of 60 ft but can be 45 or 30 ft lengths. [±]

Journal Entry – debit or credit to a general ledger account with a balancing debit or credit to another general ledger account.

Journey – the route between the depot, siding, platform line or other authorised place where the train enters service and the depot, siding, platform line or other authorised place where the train reaches its destination, or

- is required to reverse before continuing to its destination
- is required to have vehicles attached or detached
- is required to terminate short of its destination as a result of:
 - infrastructure fault
 - line blockage
 - defective on-train equipment
 - any other operational reason.

This also applies to short distance shunting movements. (Rule Book definition)

Junction signal - a signal that controls more than one running route and can display an indication of route.

-K -

Key Performance Indicators – these are financial or other indicators used to monitor how well the business is doing in terms of satisfying its Critical Success Factors (order qualifying and order winning criteria.)

Keep – the section of tramway rail which keeps the tarmac from falling into the flangeway.

Kinematic Envelope – the volume of space swept through by a train in motion. It takes account of overhang on curves, tilting, etc thus differing from the static loading gauge The kinematic envelope must be smaller than the structure gauge. [±]

King Lever – a lever that, when operated, unlocks other levers. (Rule Book definition). On LUL, a king lever is one which, when all running signals are selected for a through route, can be pulled to put the signalling into automatic working, thereby allowing the signal box to be closed.

Know How – any knowledge, experience, invention, patent, process, drawing, model, plan, design, circuit diagram, computer program or similar information.

- L -

Ladder Track (1) – a track connecting successively the tracks of a yard.

Ladder Track (2) – a specialised track form where sleepers are connected by beams approximately below the rails, with the sleepers acting as the ‘rungs’ of the ‘ladder’.

Late Surrender Protection – on LUL, when engineering work is not completed by the end of engineering hours and special arrangements have to be made to protect the workforce.

Lateral Track Force – sideways force on the track generated by a vehicle on a curve.

Lead Business Unit – the business unit responsible for sending an invoice for all services to a TOC, regardless of which business unit will ultimately recognise the income.

Lead track – an extended track connecting either end of a yard with the main track.

Leeds Northern – slang title given to the line between Northallerton and Eaglescliffe. This line ran from Wortley Junction through Horsforth, Harrogate, Ripon, Northallerton, Eaglescliffe, Stockton, Hartlepool and Sunderland to Newcastle. It was owned and operated by the “Leeds Northern Railway” from 1847 until 1854, when it was taken over by North Eastern Railway (NER) but (surprisingly) Leeds Northern title lives on in everyday railwayman’s language.

Level Crossing (UK) – the point where a railway line and a motor vehicle road intersect at the same level. Protection levels include (i) signage, (ii) road traffic signals, (iii) flashing lights, (iv) automatic half barriers, (v) automatic full barriers, (vi) manually operated barriers. Level crossings may be monitored locally or remotely using CCTV etc. (US: Grade Crossing).

Lever – includes a switch, button or workstation control (Rule Book definition).

Lever Collar – (see Reminder Appliance.)

Licensed Operator – a company or organisation who is granted a licence by the Rail Regulator to operate rail services, and to operate vehicles on the track, under terms and conditions defined by the Rail Regulator.

Light Loco – term used to describe a locomotive running on its own without a train (usually to or from a depot for maintenance etc. (sometimes called a Light Diesel or Light Electric, according to type)

Light Rail Transit – a mode of rail transit characterised by its lower passenger carrying capacity and the ability to operate on its’ own right-of-way (reservation, side or central) or to share road space with other traffic. Nowadays light rail vehicles (LRVs) are much favoured as an alternative to full blown subway or underground (heavy metro) lines for urban rail systems due to their reduced construction costs. Passengers may board or alight from track level or using vehicle floor level platforms.

Light Rail Vehicle (LRV) – modern generic term for tram or streetcar. An electrically powered rail vehicle using rails embedded in the roadway (operating in mixed traffic) or using dedicated rail tracks, or a combination of the two as in Manchester, Sheffield, and many other European and US cities. Modern LRV design concentrates on low floor construction to make access easier for passengers and to reduce the height of platforms at stations. Much innovation is appearing in the industry as a result. Apart from recent developments in Germany, LRVs are electrically powered, generally from overhead supplies.

Light Steam – sufficient steam pressure to work injectors, lubricators and brakes but not more than 75% of maximum boiler pressure.

Like For Like Renewal – the removal and restoration or refurbishment of an item where the work does not require any fundamental design change to the Infrastructure. This may involve restoring or refurbishment of the original item or replacing it with an operationally equivalent new item.

Limit of Movement Authority (LMA) – the instantaneous distance that a train can travel before encountering a stop signal.

Line Capacity – the maximum possible number of trains capable of being operated over a line in one direction. Usually expressed as trains per hour. The theoretical (maximum) capacity will depend on the trains running speed and braking capacity and on how the signalling is arranged.

Line Clear / Line Safe – procedures on LUL whereby the absence of traction current guarantees there will be no train movement during engineering hours, without any physical form of protection being necessary

Line Light – an indicator on the drivers desk of an electric train that current is being drawn from the overhead wires. When the line light is lost (and cannot be reset) it is an indication that there may be a fault with the pantograph or overhead wires; this requires immediate attention to avoid serious damage.

Line Rail – the rail on which the lateral track alignment is based; the east rail of tangent track running north and south, the north rail of tangent track running east and west, the outer rail on curves, or the outside rails in multiple track territory (US definition).

Line Standard – see Network Rail Line Standard.

Lining Track – shifting the track laterally to conform to established alignment. Maintenance lining is ordinarily done during repairs; general lining is done to make the track conform throughout to predetermined alignment.

Link-Up – the independent organisation which administers the Railway Qualification System and Q-Link on behalf of Network Rail.

Lipping – situation where the rail surface experiences excessive lateral forces or, in the case of a rail joint, longitudinal forces. This results in the rail steel being pushed and extruded over the edge of a surface.

Liquidated Damages – financial compensation from a contractor for loss incurred as a result of his default.

Loading Gauge – the dimensions of height and width which must not be exceeded by a rail vehicle or its load, so as not to foul lineside fixtures or structures. Similarly, the dimensions in respect to the rails which must not be infringed by such structures (structure gauge). See also Kinematic Envelope

Local Procurement Agent – the individual employee in most departments throughout Network Rail who has delegated procurement authority for a range of low value purchases.

Locking Bar – metal bar connecting the switch blades to the point locking mechanism to prevent the points from moving as a train passes through the turnout. The locking bar is usually connected to a cam-mechanism.

Locomotive – a self-propelled, non-revenue rail vehicle designed to convert electrical or mechanical energy into tractive effort to haul trains of non-powered carriages and freight cars.

Long Welded Rail – usually delivered to renewal sites in 300ft or 600ft lengths (also known as CWR – continuously welded rail.)

Long Welded Rail Train – the vehicle used to deliver LWR to the work site.

Longitudinal Timber – large cross section baulk of timber used on some bridges and positioned under each rail longitudinally. It acts as a beam and is the securing point for baseplates. Also used to support rails along the edges of pits in depots.

Look Back Platform – a platform where the driver of a Driver Only (DO) train dispatches the train by looking back from the cab and checking no person or article is trapped in the doors. No mirrors or monitors are provided.

Loop – a siding with a connection to the running line at each end, used to enable a locomotive to run round a train or to allow a slower train to be overtaken by a faster train.

Lubrication, Flange – one of the critical areas of wear on railways occurs at the point of contact between wheel flange and railhead in curves. This wear reduces the flange profile and, if allowed to develop, can cause derailment. It also damages the inside edge of the rail head, potentially leading to gauge corner cracking.

The wear can be reduced by lubrication of the contact area. The lubrication system may consist of flange-actuated track mounted lubricators at the entrance to curves or trains may be fitted with on-board flange lubrication. The Paris Metro, for example, used a train-mounted lubricator which was actuated by links on the bogie which detected the change in angle as it turned onto a curve and injected a small amount of oil onto the wheel. The risk with flange lubrication is over application. This will leave lubricant on the wheel tread or railhead and results in sliding during braking. One such celebrated occasion occurred on London's Victoria Line some years ago, which resulted in 35% of the trains being unserviceable due to out of round wheels damaged by sliding.

- M -

Maglev – magnetically-levitated vehicle or train of vehicles with guidance and propulsion provided by magnetic forces. Support can be provided by either an electro-dynamic system (EDS) whereby a moving vehicle is lifted by magnetic forces induced in the guideway, or an electromagnetic system (EMS) where the magnetic lifting forces are created by actively energising magnets in the guideway.

Main Aspect – the red, yellow, double yellow, flashing yellow, flashing double yellow or green aspect of a colour light signal.

Main Line (UK+US) – the principal line or lines of a railway as opposed to branch lines (UK: also known as trunk routes). Sometimes used to refer to the fastest line(s) in a multiple track area.

Main Track (M.T.) (US) – a track extending through yards and between stations upon which trains are operated by timetable or train order or both, or the use of which is governed by block signals. (UK: Main Line)

Maintainability – a measure for the ease with which a piece of equipment or a system can be brought back to the fully operational state after an in-service failure or when being serviced. Indicators can include Time To Repair and Time To Replace (TTR).

Maintenance – the activity of returning an asset to a condition where it can safely and reliably perform its function. See also Preventative Maintenance Reactive Maintenance, Reliability Centred Maintenance and Remote Condition Monitoring.

Maintenance Depot – a location defined in a Train Operator's contingency plan with the facilities to repair or replace specified items of defective on-train equipment (Rule Book definition).

Manned Level Crossing – any of the following level crossings:

- operated locally by a signaller or crossing keeper
 - remotely controlled
 - closed circuit television
 - traincrew operated.
- (Rule Book definition)

Margin Book – a reference book defining the characteristics of each TRUST reporting point on the zone in relation to data accuracy requirements.

Mark 1 – the original British Railways passenger vehicle design of the 1950s which was constructed using an underframe and a relatively light superstructure. Now only RES parcels vans, some charter sets and some electric multiple units operated by South West Trains, South Central and Connex are of the Mk1 type. The "Mark" no. refers to the basic type of stock.

Mark 2 – integral body shell design passenger coaching stock which was built in the late 1960s and early 1970s. Virgin Cross Country, Great Western, Anglia and West Coast use such rolling stock for loco-hauled trains only. The "Mark" no. refers to the basic type of stock.

Mark 3 – integral body shell design passenger coach and HST trailer cars. The "Mark" no. refers to the basic type of stock.

Mark 4 – describes the type of coaching stock used for the InterCity East Coast electric trains which had originally been built for tilting operation but was not fitted with the necessary mechanism. The "Mark" no. refers to the basic type of stock. [±]

Marker Board – a double-sided yellow board with two vertical red-yellow flashing lights on one side and two yellow flashing lights on the other used to indicate a work site (possession). From August 1999 there have been two types: i) Possession (red lights); ii) Work Site (yellow lights). Possession and work site are not necessarily the same.

Market Segment – a group of passengers sharing characteristics, either in terms of socio-economic background or in terms of their valuations of (and hence their willingness-to-pay for) aspects of railway service.

Marshalling Yard (UK) – a number of sidings in a particular arrangement which are used to split and re-form freight trains. Trains arrive in reception sidings and the individual wagons are distributed into classification sidings using a hump or shunting. Re-formed trains are moved to departure sidings where they are collected for onward movement. Very common in US and some continental European countries but not in UK. (US: Switching Yard)

May – a word used in procedural documents to express a permitted practice or action. Compare with shall, should, must, will.

Measured Shovel Packing – a track maintenance procedure where gravel is placed underneath individual sleepers to restore track top without disturbing the underlying ballast. Stoneblowing is the mechanised form of this method of treatment.

Mechanical Points – points (turnouts) which are operated without any form of power operation.

Mentor – (1) property management and accounting system, holding a database of property related information and providing a full range of financial and management accounting functions or (2) an overhead line test coach operated by AEAT-Rail at Derby.

Merry-Go-Round – coal supply train from colliery or other bulk loading point to a power station, always in the same configuration. [±]

Messenger Wire – (see Catenary).

Metro – the term used to denote an urban railway running exclusively on its own right of way, often partly or wholly underground, carrying large numbers of passengers on trains at close headways. In the US synonymous with the term "subway". The word is a diminution of the Metropolitan Railway of London, the first urban underground railway in the world. It has since been adopted by many transport authorities to give a catchy name to their system, even if not strictly correct.

Midland Main Line – main railway line from London St. Pancras to Leicester, Nottingham and Sheffield.

Mill Heat Treated Rail – rail subjected to accelerated cooling or other heat treatment after rolling, with the intention of achieving specified mechanical properties.

Mini Marpas – Maintenance and Renewal Planning System used by BR Research to derive track usage rates for new vehicle types as they are introduced onto the network.

Miniature Stop Lights (MSL) – a combination of an automatically operated red light and green light installed at a User Worked Crossing, Bridleway or Pedestrian Crossing. Green indicates that the crossing is safe to use and red indicates that a train is approaching. The crossing user is expected to contact the signal box by telephone if no light is shown.

Minutes Average Performance – a database of train delay costs.

Moderation of Competition – a system controlled by the Office of Rail Regulation which ensures that nominated traffic flows are not subject to revenue abstraction by competing operators

Motor Bogie – a powered bogie. The term is usually confined to multiple unit trains so as to distinguish them from trailer (unpowered) bogies. Within a motor bogie there may be one or several motored or powered axles. Some railways operate trains with all bogies or even all axles motored. See also "bogie".

Motor Car – a passenger vehicle in a multiple unit train that is equipped with at least one motored axle and with the associate traction power equipment.

Moving Block Train Control – the provision of a full braking distance between trains, based on the line speed rather than the speed of individual trains, limits track capacity. A first approach to increasing the capacity of a railway line is to provide a braking distance based on the current speed of a train and not that given by the line characteristics. This is described as moving block signalling. See also Relative Braking Distance.

Multiple Unit (MU) – a term referring to the practice of distributing traction power to units along the length of the train and for coupling two or more power units. MUs can be EMU (electrical) or DMU (diesel).

Multi-SPAD signal – a signal that has been passed at danger (as defined in category A) more than once in 12 months or three or more times in any three year period.

Must – a word used in procedural documents where compliance with legislative or regulatory requirements is obligatory. Compare with shall, should, will, may.

- N -

Nairns Programme – work on the reprofiling of farm crossings to improve adverse gradient profiles and associated work, named after the town of Nairns in Scotland.

Narrow Gauge – a gauge narrower than standard gauge. A gauge of 24 inches or less is commonly employed for industrial railways. Meter gauge is often used in territories at some time under the influence of Germany and France while UK influenced areas would be dominated by 3ft6in tracks (1067mm).

National Railway Academy (NRA) – superseded concept for a national organisation to offer, deliver and validate railway oriented training and education.

National (Railway) Radio Network (NRN) – VHF (200 MHz) general purpose cellular radio type network (non-secure). Used for RETB with a secure protocol.

Network Rail – the not-for-profit company that maintains and enhances most railway (not Metro) wayside infrastructure in UK, created when Railtrack was put into railway administration. Network Rail bought the assets of Railtrack in spring 2003. Some harbour railways are also responsible for their own track.

Network Rail Energy Database – a bespoke computer system operating on a Microsoft Access database. Each Network Rail zone operates the system in the Finance department, and HQ Procurement operate a master system with an aggregate of data of all Zone and HQ departments. [±]

Network Rail Line Standard – a standard published by a directorate of Network Rail as a Network Rail Line specification, Network Rail Line procedure or a Network Rail Line code of practice,. Its alphanumeric identity is prefixed by RT/, followed by a letter designating its directorate. [±]

Neutral Section – a short insulated section of the overhead line to separate electrically one part of an electrified railway line from another part, e.g., to change from one supply authority to another. Isolation has to be maintained during the passing of the pantograph. Also used in power supply management and fault mitigation. [±]

New Line – a term sometimes used for the Hertford loop, which is newer than the main line via Welwyn.

Nexus – the trading name for the Tyne & Wear Passenger Transport Executive (which is no longer a transport operator in its own right.)

No Block Line – a line on which the signaller does not monitor the condition of the block section (Rule Book definition).

Northern City Line – the line from Drayton Park to Moorgate which is the only DC electrified line on the Eastern zone.

Number, turnout – the number corresponding to the angle of the crossing used in a turnout. In the UK frogs are lettered from A (steepest) to G (shallowest).

- O -

Occupation Bridge – a bridge carrying a private road which pre-existed the railway. User rights for the bridge are generally as for the road it carries

Occupation Crossing – a level crossing which does not carry a public road, but one which leads to a farm, factory etc..

Off – term used when a signal is in the cleared position (e.g., the Distant is “off”).

Office of Passenger Rail Franchising – the organisation which funds unprofitable passenger services and allocates franchises to TOCs.

Old Road – the line between Rotherham and Chesterfield bypassing Sheffield, so called because it was built before the latter line.

On – term used when a signal is displaying its most restrictive indication (e.g., the distant signal is “on”).

On-Track Plant – a road rail vehicle (RRV) or rail mounted maintenance machine (RMMM), also known as ‘possession only’ vehicles (Rule Book definition).

Oncost – total project cost less design and implementation cost.

One Train Working (OTW) – also referred to as ‘one engine in steam’ operation. Method of operation for single line track sections, with or without a train staff, where only one train at a time is permitted to enter the section.

Open Access – the arrangement by which new train operators may gain access to the railway infrastructure, provided they meet specified safety and other standards.

Open Level Crossing – an unmanned level crossing that has no barriers, gates or road traffic signals. It has a ‘Give Way’ sign on each road approach.

Operationally Equivalent – a replacement item which is functionally identical to the item it replaces, albeit with physical or cosmetic differences.

Operations Control – the general term used for Network rail Operations Control offices (Rule Book definition).

Orcats – the computer system used to divide revenue from ticket sales between train operators.

Originating Unit – the business unit responsible for posting an interunit journal entry to move income or cost from one business unit to another in order to match income with costs.

Out of Service – a train is out of service between the time it completes its journey and the time it starts another journey. A vehicle is out of service when it forms part of a train that is out of service, or when it has been detached from a train in a depot, siding, platform line or other authorised place. The detraining of passengers does not in itself mean a train has been taken out of service.

Outfall – place at which one drainage system discharges into another drainage system or watercourse.

Outline Project Specifications – a document listing the principal elements of proposed signalling works.

Output Based Contract – a contract where the outputs and the price are defined, not the means to achieve the end result.

Outside Party – an organisation or legal entity other than Network Rail.

Overbridge – a bridge crossing over the railway (Network Rail property). This includes bridges for roads, footpaths, services or industrial use. [±]

Overhead – generic term (as in "the overhead") referring to electric traction supply wires suspended over the track for current collection by trains. Also known as "overhead line, OLE or OHLE (overhead line equipment) or catenary after the contact wire suspension system. Current is collected by a pantograph on the roof of the train or locomotive, although trolley poles are still used on some tramways (e.g., Melbourne, AU).

Overlap – the section of line in advance of a stop signal which must be cleared by the preceding train before the next signal in rear of the stop signal can display a proceed aspect. Practically, a short (about 200m) additional braking distance beyond a signal, provided in case the train fails to stop at the signal when it is showing a danger aspect. On metros using the equiblock system, the overlap is usually a full block section long. [±]

- P -

P1 and P2 forces – vertical impact forces occurring at dipped rail joints. Maximum P1 force permitted in the UK is 350kN.

P11D Generation System – a PC based facility for preparing P11D returns for the Inland Revenue and the individual forms for distribution to employees.

Packet Switch System – (PSS) transmission of information (voice, data etc) over one or several routes, using short packages, each with a unique identifier, which are combined by the receiver to make up the full message.

Paladin – a database used to store train running information captured by the TRUST system Paladin is available to all rail industry users.

PALADIN Extract and Reporting System – a versatile train performance measurement facility, producing analysis reports focusing on train performance and delay attribution.

Pantograph – variable height traction current collection device mounted on the roof of a railway vehicle fed from an overhead supply system, usually featuring a carbon contact strip. Nowadays, pantographs are sophisticated aerodynamically designed devices which can operate at high speeds and on tilting trains without loss of contact and with built-in safety devices which reduce the risk of damage to overhead wires in the event of a fault. Under certain circumstances (high winds etc.) a pantograph may rise above the wire and can pull it down for considerable distances before this is noticed by the train crew and the train can be stopped.

Modern pantographs are fitted with automatic detection and dropping devices (ADD), such a device can be created by using a hollow carbon collector strip on the pantograph. This is connected to a pneumatic circuit which will trigger a switch if the air escapes when the contact strip fractures due to an impact. Alternatively,

the horns (curved ends) of the pantograph may be equipped with frangible pneumatic sensors which, if broken by a wire support, cause the detector system to lower the pantograph.

Parent Track (US) – a track from which a turnout is constructed. A main track is the parent track as opposed to a passing track or spur, a ladder track is the parent track with respect to the yard tracks.

Parental Guarantee – a document signed by the holding company which owns the subsidiary company entering into a contractual agreement with Network Rail, where the holding company underwrites all potential liabilities of the subsidiary.

Parkway Station – a railway station with a large car park and easy road access.

Passenger Service – a train that is in service carrying passengers (Rule Book definition).

Passenger Service Requirement Compliance Yardstick – a computerised system commissioned by OPRAF to check whether TOCs are meeting their Passenger Service Requirement.

Passenger Track Access Billing System – which calculates track access charges for each passenger TOC, based on the tariffs for each service group and the record of all train movement details.

Passenger Transport Executive (PTE) – professional management of public transport provision in an ITA area (e.g., Lothian, Greater Manchester, Merseyside, South Yorkshire, West Yorkshire, West Midlands).

Passenger Trespasser – a person either travelling or intending to travel who is in a place on the operational railway where they are not authorised to be.

Passing Loop (UK) – a parallel length of secondary track provided in places where trains pass or overtake each other. This may be provided in conjunction with a station.

Pee-Wee – a warning device for use by personnel on or near the line.

Perform – a BR Business Systems data extraction and analysis system that uses PALADIN data.

Performance Historical Information System (PHIS) – an older TRUST performance database, available via TRUST to authorised users.

Performance Pollution – the phenomenon when disruption from other routes is being imported onto a well performing route with a stable service, e.g., by individual late running trains.^{PRC}

Periodical Operating Notice – a bi-monthly publication which contains all current amendments to the books of Rules and Regulations and certain miscellaneous notices.

Permanent Way – generic term for the structure of the railway track, referring to the rails, sleepers (ties in US), ballast, any blanketing material (including geo-textiles) and associated drainage. The term "permanent" arose to distinguish it from the temporary track laid during the construction of the railway.[±]

Permanent Way Component – a constituent part of the structure of the track including assembly tools and fixtures (but excluding permanent signalling equipment other than stretcher bars of turnouts or points), track ballast and sub-ballast material or drainage.

Permissible Speed – the maximum permitted speed as shown in the Sectional Appendix (Rule Book definition).

Permissive Working – permits more than one train to be in the same signal section on the same line at the same time; can apply to some platforms. Refer to Absolute Block as a contrast.

Person in Charge of Works -responsible for ensuring the safety of staff working on the track or nearby.

Personal Track Safety (PTS) – a Network Rail certificate of competence which must be obtained to be allowed access to the Network Rail controlled infrastructure (track-side). The certificate requires attendance at a two day course and passing of a test.[±]

Personnel Enquiries and Administration Recording Local System – used to maintain data about employees.

Phase 0 – period of interim and full running of ATT (active tilting train) on the WCML at existing line speeds.

Phase 1 – period of full running of ATT (active tilting train) on the WCML up to speeds of 200 km/h (125 mph) between 2002 & 2005.

Phase 2 – full service of ATT (active tilting train) on the WCML after April 2005 up to speeds of 225 km/h (140 mph).

Phase Break – a location where overhead wires are sectioned (see Neutral Section) to provide an insulated section between different sources of electric power.

Physical Needs Break – a guaranteed break in a driver's turn of duty when he or she is free from duty.

Piggyback – the conveying of unaccompanied lorry trailers by train.

Pilotman – a man provided to accompany a train driver in certain circumstances, usually:

1. The driver does not know the route or traction
2. Temporary single line working is in operation and the Pilotman's presence is essential to ensure that only one train at a time is on the single line

The term Route Conductor or Traction Conductor are also used.

Pinch Point – a location on the rail network where the number of train movements is close to, or projected to exceed, the capacity of that location.

Piped – vehicles of a freight train which have a continuous brake pipe, but which themselves have no operative brake (this arrangement allows for following vehicles to have an operative brake).

Pipit – a performance system which records the reasons for train delays, compatible with EGRET.

Platform, high – a passenger station platform at approximate car-floor height.

Platform, low – a passenger station platform at approximate top-of-rail height.

Platform Reoccupation Time – the minimum time permitted by the signalling system to enable one train to leave a platform and for another to enter it.

Pocket track (US) – a special track connected to the mainline to allow storage of out-of-service trains.

Point Lock – (see Switch Lock).

Point Motor – a device used to move the switches (points blades).

Point of Switch, theoretical – the point where the gauge line of the switch rail, if produced, would intersect the gauge line of the stock rail. Also called vertex.

Points – UK term used in the same way as the term turnout, denoting the sum of the infrastructure components (e.g., S&C) required to allow trains to change tracks. Colloquial term for the switch rails in a turnout. See page 59 for an illustration.

Points and Crossings – an alternative abbreviation for S&C.

Points Run Through – a movement which runs through a trailing set of points which are not set in the correct position for the train movement.

Portable Data Terminal – used inter alia by signallers to input data to TRUST by attachment to a BRT telephone line.

Portal – entrance to a tunnel or a type of overhead line support.

Possession – when a section of track is required for maintenance, repair or renewal and when trains cannot run, it is handed over by the operators to the engineers, who take "possession". Special protective measures are used to prevent access by unauthorised trains. The Engineer may run his own trains within the limits of the possession but no other trains are allowed to run within it and comprehensive safety regulations ensure that these conditions are maintained. When the track is returned to the operators, the engineers "give up possession". [±]

Possession Block – the octagonal warning board and three detonators positioned at the outer limits of a possession.

Possession Limit Board – a double sided board, red on both sides, with a red light (which may be steady or flashing). The board also has the word STOP printed on both sides. It is placed in the four foot at the detonator protection for a possession (Rule Book definition).

Power Box (UK) – signal box controlling a large area using remote control systems to set routes in interlockings at remote locations (US: CTC).

Power Operated Doors – doors on a train where the opening and closing is controlled by the Guard (or Driver in the case of a DOO(P)) train.

Power Operated Points – points operated by a means other than mechanical, e.g. electric motor, hydraulics or compressed air.

Power Unit – a self-propelled vehicle, running on rails and having one or more electric motors that drive the wheels and thereby propel the consist to which it belongs, on an electric power unit. The motors obtain electrical energy either from a rail laid near to, but insulated from, the running rails, or from a wire suspended above the track. Contact with the wire is made by a pantograph mounted on top of the unit.

Preventative Maintenance – describes the activity of performing scheduled maintenance on the basis of experience with the objective of minimising the potential for in-service failures.

Primary Authority – the authority granted by the Network Rail plc Board directly to named individuals or bodies to act on behalf of the Board.

Priority On Managing Performance Trends – a Railtrack initiative announced in early 1998.

Procedure – a document that specifies or describes how an activity is performed. It also identifies the what, when, where and who of the activity described.

Process for Performance Improvement – performance management based on principle of delay budgeting.

Profile – (1) a longitudinal section through a track that shows elevation and depression. Also, a drawing showing grade line of a railway, usually obtained from levels taken on top of the rail. (2) Cross sectional shape of the wheel tread. In the UK there are a number of profiles, the P8 profile is most common on UK vehicles.

Project – a collection of activities resulting in a change of state of the infrastructure including design, construction, installation, modification, maintenance, renewal and disposal activities.

Project Management Control System – the computer application which was by Railtrack for controlling time and cost elements of projects.

Project Manager – person responsible for managing all aspects of an infrastructure project as defined by the Project Manager's remit in accordance with the specification and terms agreed with the supplier at contract award.

Project Release – a short term initiative to spread awareness of Railtrack standards.

Project Resolve – a long term initiative inaugurated in 1998 to classify, review and rationalise Railtrack standards.

Project Safety Case – a set of documents which specify how a project is to be safely designed, constructed, commissioned, operated, maintained and decommissioned.

Project Safety Strategy – a document that describes the safety policy and arrangements for a single project or group of similar projects

Projex – project expenditure.

Prompt – a national performance improvement initiative, commencing 1998.

Propelling – moving a train using a locomotive at its rear.

Property Action Line – a former Railtrack Property national telephone help desk for customers to report faults and provide feedback.

Protection – in a specialised sense, used for the rules governing the protection given to a train which stops in an unusual location or becomes derailed, to stop another train hitting it. The Rule Book definition reads as follows: "Ways of making sure that a line is protected. This includes keeping signals at danger, placing detonators on the line, using a track circuit operating clip and showing a hand danger signal."

Protim – a computer based system for train timing and pathing. Train planners enter details of calling stations for a proposed train service and journey timings are produced as timetables in a variety of formats. To be replaced by APLAN.

PTB – Person to Blame. The Project Manager for any project will appoint a PTB for the project, always from another organisation and preferably without their knowledge. The PTB is responsible for all failures, whereas success is the personal responsibility of the Project Manager.

PUG1 – WCML infrastructure enhancements upto May 2002 to improve capacity, journey times and to secure additional revenue.

PUG2 – additional WCML infrastructure enhancements upto 2005 to improve capacity, journey times and to secure additional revenue.

PUMPS – a computer system which extracts performance data from PALADIN, adds in data from FRAME and converts it to an excel spreadsheet. For the PROMPT initiative.

Push-Pull – a method of locomotive-hauled train working in which the locomotive is permanently attached at one end of the train and when at the rear, is remotely controlled from a drivers cab built into the leading vehicle (see DVT). Its advantage is that run-round moves or turnover locomotives are unnecessary.

- Q -

Q-Link – the database run by Link-up which holds information relating to pre-qualification of suppliers to the railway industry.

Q-Trains – just one tool in the rail industry's campaign to stamp out trespass and vandalism. Q-Trains travel through trouble spots with the British Transport Police on-board. If they see trespassers, the train stops so they can be apprehended. Named after World War II warships that masqueraded as merchant ships.

Quadrant Analysis – a way of presenting information to highlight and explain trends.

Qualifying Expenditure – expenditure recoverable from TOCs using major stations.

- R -

Radio Block Centre – (RBC) Nerve centre of any moving block system where the status of the infra-structure and the locations of all trains is known and where limits of movement authority can therefore be issued to all the trains within the control area.

Radio Electronic Token Block – (RETB) Radio based block system where a coded message is sent to a particular train. This message is acknowledged in a secure manner to the signal box or control centre and allows the driver to move from a station onto a single track section of railway. Particularly suited to low traffic routes. May include ATP and radio controlled points.

Radius of Curvature – a measure of the severity of a curve in a track layout based on the length of the radius of a circle that would be formed if the curve were continued.

Rail – a rolled steel shape designed to be laid end-to-end in two parallel lines on sleepers (US: ties), to form a track for railway rolling stock, travelling cranes and the like. There are two main types of rail in use in the UK. Flatbottom rail is the most common, while Bullhead rail is still in use in sidings and on branch lines. Network Rail has adopted UIC60 rail (which weighs 60 kg/m or 125 lb/yd) as its standard for high speed lines. The previous standard, which is still being installed, is equivalent to the UIC 54 rail, and weighs about 113 lbs/yd or 54 kg/m

Rail Bond – a device used to transfer an electric circuit at a rail joint.

Rail Creeping – intermittent longitudinal sliding movement of rails in track under traffic or because of temperature changes. The effect of rail creeping is resisted by anti-creepers or rail anchors.

RAIL DATA – records of broken and defective rails, meeting the requirements of Network Rail's Group Standards organisation.

Rail Fastenings – (see Fastenings, track).

Rail Foot – the flat bottomed part of the rail, held down by the fastenings.

Rail Head – the top portion of the rail that the wheels run on.

Rail Incident Officer – normally a Network Rail employee who takes control at the scene of a rail incident or accident.

Rail Industry Safety Strategy Committee – a body set up in 1998 and composed of representatives of railway industry parties affected by changes to Railway Group Standards. Their remit is to provide advice concerning high level or strategic issues affecting Group Standards to Railway Safety and Standards Board when requested.

Rail Joint, Insulated – a rail joint which arrests the flow of electric current from rail to rail, as at the end of a track circuit, by means of non-conductors separating rail ends and other metal parts.

Rail Regulator – an officer appointed by the Government to regulate the railway industry.

Rail Seat – those areas on the upper face of a sleeper normally between 400mm and 660mm from each end where the rail or chair sits.

Rail Section – the pattern or dimensional details of rail, such as width of base, height of rail, thickness of web, width and thickness of head, angle of head, and angle of base. Each particular pattern is identified by a brand name or symbol such as ASCE, AREA, ARA, PRR, UIC and others in addition to its weight per yard.

Rail Tensors – hydraulic devices for extending CWR during rail stressing.

Rail Users Consultative Committees – replaced the old Transport Users' Consultative Committee.

Rail Web (UK) – see Web.

Raildata – (see Rail Data).

RAILNET – a project to update and expand the transport of mail by train; involved Railtrack, Royal Mail and Rail Express System (RES).

Railtrack – the privately owned company (plc) that bought the railway infrastructure at the time of privatisation. Railtrack was put into Railway Administration by the UK government in autumn 2001, partly as a result of the Hatfield railway accident. The company was dissolved and its assets were bought by Network Rail.

Railtrack Corporate Manual – the suite of documents that fully defined the standing orders for the governance of the whole of Railtrack as instructed by the Board of Railtrack plc.

Railtrack Energy Database – a bespoke computer system that operated on a Microsoft Access database. Each Railtrack zone operated the system in the Finance department, and HQ Procurement operated a master system with the aggregate of data of all Zone and HQ departments.

Railtrack Financial Asset Records – system which was used by Railtrack to record the purchase cost and the current book value of assets.

Railtrack Rail Crossing Risk Model – a software package designed to calculate risk levels at automatic level crossings.

Railtrack Line – that part of the Railtrack organisation that was the ultimate responsibility of the Chief Executive.

Railway Group – comprises Network Rail, the duty holders of railway safety cases accepted by Her Majesty's Railway Inspectorate (HMRI), and the British Railways Board while it was owner of train operators.

Railway Group Standard – (see Group Standard).

Railway Safety Case – a set of documents submitted to and accepted by the Health and Safety Executive pursuant to the Railway (Safety Case) Regulations 2000, based on advice from HMRI, Railway Safety and Network Rail. [±]

Railway Safety and Standards Board (RSSB) – railway industry group owned not-for-profit company in charge of setting Group Standards, auditing performance and pushing forward the safety agenda through research and development.

Railway Skills Council – an organisation owned by all the members of the railway group charged with promoting quality education and training for all railway staff. [±]

RAMS – Reliability, Availability, Maintainability and Safety, an omnipresent set of terms when talking about safety and performance on railways. See individual terms for details.

Rapid Response Procedure – (1) the means of calling the contractor to incidents by Zone Duty Contracts Managers or Contractors Infrastructure Fault Control or (2) the means defined in Railway Group Standard GA/RT/6001 for quick implementation of amendment to a Group Standard.

RCM² – combination of RCM₍₁₎ and RCM₍₂₎ to optimise infrastructure maintenance.

Reactionary Delay – the delay to trains resulting from an earlier train delay.

Re-active Maintenance – maintenance performed in reaction to the results of an inspection or an alert by a user of an asset or by a third party. Opposite of Preventative Maintenance.

Refuge – a dead end siding allowing trains to be shunted off the running lines; also a place of safety in tunnels and alongside high speed lines where employees can stand in safety.

Regenerative Braking – a form of dynamic braking using the traction motors as generators, the power produced is returned to the supply system.

Registration Arm – shaped steel or aluminium arm used to position the contact wire of the OLE (OHLE) accurately with respect to the portals or other support structures of the catenary system. Plastic or porcelain insulators are used to mount the registration arm from support structure.

Regulate – (1) signallers can regulate the train service by giving priority to one train over another, (2) In maintenance terms this means levelling the ballast (see also “Tamping”).

Regulated Income – income regulated by the Office of the Railway Regulator (ORR). Regulated Income is also described as franchised income.

Regulation – (1) the order in which trains are run in practice so as to minimise delay (2) statutory statement.

Relative Braking Distance – the provision of a relative braking distance between trains is based on the assumption that the train in front cannot stop instantaneously and that the train behind can therefore follow with a very small gap. Essentially based on the reaction time to start braking when the train in front is starting to decelerate. The railway industry has never accepted this as a viable proposition because there have been instances where trains stopped dead, e.g., as the result of a collision with another train.

Relay – an electro-mechanical switching device used in many types of signalling systems; it “relays” instructions to signals and points. The device contains motors or magnets, which, when energised, cause electrical circuits to open and / or close Relays are now being superseded by Solid State Interlocking (SSI), in particular in areas controlled by IECC signal boxes. [±]

Relay – to replace worn out or damaged track.

Reliability – a measure for the probability that a piece of equipment is working normally or for the ratio between the time during which a piece of equipment is functioning correctly and the total period during which it is needed.

Reliability Centred Maintenance (RCM₁) – an approach to maintaining fixed and movable assets with the objective of achieving a target reliability by tuning both periodicity and scope of maintenance activities in line with the demands placed on the particular piece of equipment by its operational role.

Relief Line – a Great Western term for the slower line in a multiple track area – usually known as the Slow Line elsewhere.

Reminder Appliance – a device of control used to remind a Signaller that a particular lever, button or switch must not be operated in the normal manner (eg. a lever collar.)

Remit – a document that defines the scope of the project, the authority of the project manager, the deliverables and any other relevant information.

Remote Condition Monitoring (RCM₂) – describes the use of telemetry and complex algorithms to assess the state of railway infrastructure remotely, with the objective of managing maintenance effort so that assets cannot deteriorate beyond the point where they would affect safety and reliability.

Repeater – either an indicator in a manual signal box which shows the position of a signal arm and whether the signal lamp is lit or a signal which gives an advance indication of the aspect of the next stop signal.

Resources – includes: information, funding, personnel, plant and equipment, time.

Retarder – a braking device, usually power-operated, built into a railway track to reduce the speed of vehicles by means of brake shoes which, when set in position, press against the sides of the wheel flanges.

RETB – Radio Electronic Token Block : a system for signalling trains on single lines by a combination of computer control and radio messages. There is no physical token but the software issues messages allowing trains to proceed on the single line.

Return On Capital Employed – this is a ratio used to assess the return that the company is producing for the shareholders. It is expressed as the profit made in a year as a percentage of the assets.

REV (rev) – found on international registered wagons to denote date of overhaul.

Revenue Project – non routine activities that do not result in a capital asset yet still deliver a measurable output. Revenue projects are funded through the profit and loss account and may be either technical support, research & development, standards development etc.

Reversing siding – a siding where trains can be turned back to start their journey in the reverse direction (the LUL equivalent of a turnback siding)

Rheostatic Braking – a form of dynamic braking using the traction motors as generators, the power produced is dissipated in resistors. This is the only form of dynamic braking that can be used with autonomous traction.

Ribbon Rail (US) – continuously welded rail free of joints or with very few joints over long stretches.

Right of Way – land or water rights used for the railways roadbed and its Structures and kept clear for operations.

Right Side Failure – something which fails but does not fail to an unsafe condition, e.g., a green light going to red. (See also the opposite – Wrongside Failure)

Risk – the combination of the severity of a hazard and the likelihood of its occurrence.

Risk Log – a continually updated record of identified hazards together with their associated level of risk and control measures necessary.

Road – railway jargon for railway line.

Road-Railer – road trailer which can be converted to rail operation by adding a rail bogie between two trailers.

Road-Rail Vehicle – a vehicle capable of running on both road and rail. Normally used to travel by road to the nearest point for accessing a work site by rail. May have a built-in turntable to change direction.

Rod, Operating – a rod attached to a point blade, derailment device or other moving component, moving it from one position to another.

Rolling Contact Fatigue (RCF) – the process whereby the high forces in the contact patch cause the development of cracks that penetrate into the rail head or into the tread surface. The cracks can grow just underneath the surface, causing flaking and spalling or they can ‘turn down’ and lead to rail breaks or severe railhead and wheel damage.

Rolling Stock – passenger and freight vehicles, locomotives, multiple units, any vehicle in revenue service.

Rolling Stock Technician – a person who is authorised and has the necessary technical competence to examine or repair specified items of equipment forming part of a train or vehicle.

Rolling Stock Acceptance Board – the Network Rail sponsored organisation responsible for the management of the T&RS route acceptance process with responsibility for the approval of route acceptance requests and the issue of T&RS Certificates of Authority to operate (CoA) and Certificates of Technical Acceptance.

Route Acceptance Request – application by an operator, owner, etc. to run a new or modified vehicle on Network Rail’s network.

Route Availability – a code used to indicate which rolling stock can use which routes. Must be used in conjunction with the loading gauge availability.

The allowable mass per axle, commonly referred to as the axle load, is a further important constraint. In most cases though, this last constraint can be overcome by reducing the payload when using a particularly restrictive route. In Britain, the maximum allowable axle load is now generally 25.5t and the axle load capability of railway routes is classified in terms of Route Availability (RA) with the following main ranges:

- RA 1-6 up to 20.3 tonnes per axle;
- RA 7-9 up to 24.1 tonnes per axle;
- RA 10 up to 25.4 tonnes per axle.

Route Crime – the current term for what was previously known as Trespass and Vandalism. It includes suicides and other illegal acts on railway land. [±]

RT1 – the original main type of maintenance contract between Railtrack and the IMUs (see also IMC).

RT27 – the Railtrack contract for rapid response to structure damage and flooding.

RT60 – Network Rail Group Standard for the UIC60 based rail system, including associated switch & crossing work (S&C). Features are: design for 30 tonne axle load, suitable for 140mph tilting trains, reduced impact forces, improved ride quality, inclined rails through S&C, optimisation of design for mixed traffic.

RTIS – the Railtrack company-wide information systems service organisation which, in June 1995, brought into one team the company’s full time Information Services people.

Rule Book – a set of rules that incorporates most of the requirements to be observed by general railway staff for the safe operation of the network. This book is now published in 14 volumes, each one “personalised” by job type, e.g., No.3 Signaller, No.4 Train Driver etc. [±]

Rules of the Plan (ROP) – rules that are applied to bids from train operators when scheduling train paths on Network Rail's infrastructure to ensure conflict free and robust operation of train services.

Rules of the Route (ROR) – an agreement between Network Rail and train operators which states when lines can be temporarily closed, or when speed restrictions can be imposed for maintenance and renewal work.

Run Through (of points) – an incident where a movement runs through a trailing set of points that are not set in the correct position for the movement (Rule Book definition).

Run-Out / Run-In Time – the minimum time permitted by the signalling system to enable one train to leave a platform and for another to enter it.

Running Line – a line as shown in table A of the Sectional Appendix as a passenger line or as a non-passenger line (Rule Book definition).

Running Rail – the rail or surface on which the wheel bears, as distinguished from a check rail, guard rail or wing rail.

Running Round – transferring a locomotive from one end of a train to the other by means of a loop.

- S -

S&C Layout – a crossover, turnout, double junction, etc made up of a number of sub-assemblies complete with all bearers and other components except point motors.

S&C Unit – half or full set of switches, a crossing, check rail, expansion switch, cast crossing or other sub-assembly machined or shaped for a use as part of S&C.

S&K – the line between Milford, Ferrybridge and Swinton, so called because it was built by the Swinton & Knottingley Joint Railway.

Safety Advisory Panel – the body responsible for type approval and for providing recommendations when requested by train operators and train builders.

Safety Authority – the person or persons accountable for safety.

Safety Case – a formal presentation of evidence, arguments and assumptions aimed at providing assurance that the design and implementation of a system complies with the safety objectives.

Safety Critical Defect – a defect which, on assessment, is an immediate threat to the safety of trains or the public or Network Rail staff and warrants trains being stopped or cautioned until remedial action is undertaken.

Safety Critical Work – defined in the Railway (Safety Critical Work) Regulations, 1994 as maintenance, repair, renewal or alteration of:

- permanent way or other means of guiding or supporting vehicles
- signals or other means of controlling the movement of vehicles
- any means of supply of electricity to vehicles or to the means of supporting vehicles which could affect the health and safety of personnel on a transport system

Safety Management System – a proven system which, when followed, enables a company to perform tasks safely, at all levels of the organisation. The system to achieve this blends personnel, resources, policies and procedures together. Such a system must also recognise instances when it is inadequate to requirements and generates change to the system to correct the deficiencies.

Safety Review Group – the Zone management group responsible for approving any change (except T&RS change) that has a potential impact on safety.

Safety Risk Assessment – a risk study for a specific safety issue identified within the risk log.

Safety Validation Document – documentation prepared in support of safety validation of an organisational or SMS change, including relevant sections of the Network Rail Railway Safety Case, safety policy statements and safety arrangements.

Sanding – a method for assisting adhesion between driving wheel and rail. The sand is carried on board the vehicle in a sandbox and is ejected, normally under air pressure, onto rails immediately in front of the driving or braking wheels to assist adhesion. It is usually operated by a push button in the driving cab or automatically by wheelslip equipment.

Sandite – a mixture of sand and antifreeze, used for assisting traction adhesion during extreme weather. Sandite S4 also contains steel shot to assist track circuit operation.

SBI Gauge – loading gauge in Britain which permits operation of road-rail swap body vehicles.

Schedule 3 – part of a contract or Track Access agreement, between a Freight Operating Company and Network Rail, defining the basic conditions of operation.

Schedule 8 – the section of a Track Access Contract governing performance payments.

Scotch – a lump of wood either placed in an open switch of points to prevent movement, or on a rail under a wheel to prevent a vehicle from being moved.

Section Signal – (often called the “starter”) the stop signal which controls the entrance to the Block Section (or intermediate block section) ahead.

Security Incident Tracking System – log and reporting tool for security incidents affecting information systems.

Security Rules – used to prevent business units from accessing other business units’ data.

Semaphore Signals – such signals are usually worked mechanically by wire from a signal box lever frame, but can be electrically operated. They use mechanical arms rather than coloured lights to display aspects. Traditional types are “upper quadrant and lower quadrant” position where the “clear” positions are at approximately 45° to the horizontal.[±]

Sequential Locking – a refinement of “Route Interlocking” which ensures that signals are operated only if particular processes occur in a certain order (e.g., occupying & clearing of the overlap track circuit).[±]

Service Life – (1) the period of effective functional activity of equipment or (2) the equivalent millions of gross tonnes of rail traffic that a track component is expected to carry from new before requiring renewal.

Set – a complete train, including loco and carriages or a multiple unit train.

Set swap – slang term for when train crew and on-board staff have to make an unscheduled switch from one train to another at the station where their train terminates.

Seven bells – slang term for stop and examine train (the block bell code for this is 7 beats).

Shaft – an opening between a tunnel and ground level above, usually provided to ventilate, to relieve aerodynamic pressure from trains or to give access during construction or afterwards.

Shall – a word used in procedural documents to express a mandatory requirement. Compare with should, must, will, may.

Shared Services – a team set up to provide an all encompassing support structure, to ensure that the Business Management Information System (BMIS) is available to be used as and when required.

Shelling – one of the consequences of rolling contact fatigue, resulting from the propagation of cracks underneath and parallel to the surface of the rail head or running surface of the wheel. The phenomenon is more pronounced on rails where the traffic is predominantly in one direction. Railhead damage takes the form of pieces of the rail or tread surface becoming detached or being torn off. The severity of the damage caused by shelling is somewhere between that associated with flaking and spalling. However, this is largely a qualitative differentiation.

Shoe – term used as a shortened version of “collector shoe” to denote a third rail current collection device mounted on the bogie of a direct current electric train. Shoes are normally distributed along the train and connected by a power train line cable to avoid loss of power at gaps in the current rail (see also: Conductor Rail and Gapping). Different types of shoes are required for top, side and under-running.

Shop-Made Joint – an insulated rail joint prepared and assembled in controlled workshop conditions, i.e. not outside or on site.

Short Term Planning – one-off bids for train paths. (see also Sport Bids)

Should – a word used in procedural documents to express a recommendation or advice. Compare with shall, must, will, may.

Shoulder Peak Services – train service timetable immediately before or after the peak period.

Shoulder, Ballast – the portion of ballast between the end of the tie and the toe of the ballast slope. It distributes the traffic load over a greater width of roadway and helps hold the track in alignment.

Shunting Signal – a signal which is provided for shunting purposes only.

Shuttle – in railway terminology, a shuttle usually means a service operating back and forth between two stations without an intermediate stop. The Channel Tunnel service is called Le Shuttle and many cities operate shuttle services between airports and city centres. The Gatwick Express, which operates in the UK between Gatwick Airport and London (Victoria) is one such. Sometimes also erroneously used to refer to short distance, regular interval services with intermediate stops.

Side Track (US) – a track used to temporarily store cars. (UK: carriage line)

Side Wear – the reduction in rail head width due to wear caused by wheel flanges coming into contact with the rails as trains run on curved track. Flange contact is prevented by maintaining good wheel and rail profiles and by keeping to the speed range for which the track is canted.

Siding (US) – a track auxiliary to a main or secondary track for the meeting or passing of trains. (UK: Centre Siding, a Reversing Siding).

Signal and Telegraph – an obsolete term still commonly used to refer to the people and the companies who maintain signalling equipment.

(Signal) 'Box (UK) – railway term for a signal box or signal cabin. In mechanical signal boxes there is generally a first floor with the mechanical levers and the block instrument while the space underneath is taken up by the interlocking mechanism and associated relays. (US: Tower).

Signal, Highway, Electric (US) – a highway crossing signal which is actuated automatically by the approach of a train and which then displays one or any combination of several features such as red lights (flashing or non-flashing) horizontally swinging disk, crossing gates, or warning bell. All are designed to warn motorists of the approach of a train.

Signal Post Replacement Key – the key used to operate a signal post replacement switch (Rule Book definition).

Signaller – UK term for person employed to operate or supervise the control of signals. Traditionally accommodated in a signal box, more recently a control room, where the signalling levers or controls are located. Formerly identified as "Signalman".

Signaller's agent – a person appointed by the signaller to convey messages between the signaller and train drivers.

Signalling, Automatic Block – a system of signals of fixed location, each located at the entrance to a block, to govern trains and engines entering and using that block. Such signals govern movements over a series of consecutive blocks. They are actuated by a train or engine or by other conditions affecting the use of the block, such as a broken rail, switch not properly lined, car standing on a turnout foul of a main track or other track obstruction.

Signalling Equipment Technical Agent – the organisation responsible for supporting and managing the product qualification and configuration control process on behalf of the asset owner.

Signalling Incident System (wrongside fault reporting) – records and forwards details of the more serious wrongside faults to infrastructure maintenance engineers, to allow for prompt analysis of the event.

Signalling Restructuring Initiative – achieved after the 1994 strikes. Inter alia, allows signallers to operate computer equipment not directly part of their signalling duties, and thus to operate Electronic Train Reporting (ETR).[±]

Signalman (UK) – politically incorrect term for "signaller". Not to be confused with the same term used in the US for a signal maintenance person or signal maintainer.

Signal Monitoring and Reporting of Trains system – provides information automatically on actual train running.

Signal Passed at Danger – (SPAD) situation where a train driver fails to bring the train to a complete stop at a red signal. In 1999 there were over 800 SPADS on Railtrack lines. Most are only by a few metres, caused by variable adhesion or poor driver control. They usually cause no collision thanks to the provision of the overlap after the signal.

Signals Passed At Danger Management Information System – supplied to safety management across the industry and the basis of reports to the Health & Safety Executive.

Silverlink Train Services – trading name adopted by North London Railways in 1997. "Silverlink Metro" is used for the Euston-Watford and North London Line services, and "Silverlink County" for the Euston-Northampton-Birmingham trains.

Simplified Bi-Directional Signalling – signalling provided to allow trains to run in the “wrong” direction during engineering work, line blockages, etc without resorting to pilotmen.

Simplified Direct Reporting – manual reporting of train times to TRUST using a computer terminal and standard TRUST screens. This includes signalbox terminals formerly known as ETR.

Single-Lead Junction – a type of junction where trains leaving and joining the main line both make use of a common section of single track.

Single Line – one line which is available for movement in both directions.

Single Line Working (train locked in) – a procedure on LUL where a one train shuttle service is provided on a single line section. The section is protected by securing points and / or maintaining signals at danger to prevent access. No pilotman is used in this process.

Site Instruction – an instruction by the employer to the contractor relating to an activity which is included in the terms of the contract and which does not vary the contract.

Six Foot (UK) – the space between adjacent running lines of a two track railway. Where there are more than two tracks, the distance between pairs of lines is usually greater than six feet.

Six Foot – space between two sets of tracks (which may be more than six foot.) (Also see Ten Foot and Interval.).

Sixty Foot – 60ft is the standard length of single rail.

Slab Track – a form of railway track comprising a concrete base to which the base plates carrying the rails are secured. It eliminates the need for individual "sleepers", also known as direct fixation track. Systems include arrangements where a bi-block sleeper in anti-vibration ‘boots’ is cast into the concrete bed.

Sleeper – wood, concrete or steel object that holds the rails apart and supports the track on the ballast.

Sleeper (UK) – in the US known as "ties", short for "crossties". The transverse members of track (-work), made of wood, concrete or steel, or even plastic composite, which are used to secure the rails at the correct gauge. Cast steel chairs fixed to the sleepers hold the rails in place by means of clips or keys.

Slide fence – a warning device connected to signals which warn trains of rock or landslides when fence wire is broken by rock fall.

Société Nationale des Chemins de Fer Français – French national railways.

Solid State Interlocking (SSI) – any signal interlocking system using electronic components (processors) and software to carry out the safety critical interlocking actions. The abbreviation is often used to refer to the UK system developed by British Rail Research and licensed to Westinghouse and Alstom. SSI is based on a central interlocking unit which has serial communication with trackside functional modules (TFMs) which control signals and points. Also referred to as CBI (Computer Based Interlocking). [±]

Sound Exposure Level – the level of sound accumulated over a given time interval or event. Technically, the sound exposure level is the level of the time-integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second. Also written as SEL.

SPAD Investigator – a person identified by the Zonal Safety and Standards Manager as having the necessary skills required for investigating the cause(s) of a signal passed at danger.

Spalling – one of the consequences of rolling contact fatigue, resulting from the propagation of cracks underneath and parallel to the surface of the rail head or running surface of the wheel. The phenomenon is more pronounced on rails where the traffic is predominantly in one direction. Railhead damage takes the form of pieces of the rail or tread surface becoming detached or being torn off. The severity of the damage caused by spalling is generally felt to be greater than that associated with shelling. However, this is largely a qualitative differentiation.

Spate – early removal or non imposition of a temporary speed restriction.

Special Conditions of Contract – documents which amend a specific set of industry standard conditions. They also include supplementary clauses covering issues specific to the railway environment or reflecting corporate policy.

Special Track Work – switches, points, crossovers or other line intersections.

Specification – a contract document setting out mandatory requirements.

Specifier – the Network Rail person or persons or organisation appointed to produce a contract specification or technical workscope associated with any individual contract.

Spiked Switch US) – a turnout with one or both switch rails held in fixed positions by spikes (or clips and clamp), usually to prevent a disconnected or damaged switch from being thrown through error, or to prevent trains from using a track that has been taken out of service. see clipped switch (UK).

Splice Bar – a joint bar. (UK: Fishplate)

Sponsor – the Network Rail person having responsibilities for progressing all aspects of the scheme in accordance with Network Rail Investment Regulations, etc and who will also normally represent the client.

Spot Bids – bids for train paths for inclusion in the permanent timetable after it has been published; spot bids have no contractual right to get into the GBPRT. (see also STP – Short Term Planning)

Squat – designation of rail surface damage caused by powered wheels slipping on the rail and causing localised heating of the railhead.

Stabling – parking of trains which are not in use for a period (e.g., overnight).

Stagger – in Overhead Line Equipment, the lateral deviation of the contact wire from the centre line of the track. The wire is staggered from side to side of this line, within fixed limits, to even out wear on the pantographs of trains.

Standard – (1) document established by consensus and approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at achieving the optimum degree of order in a given context; or (2) Railway Group Standard or Network Rail Line Standard.

Standard Infrastructure Performance System – civil engineering equivalent of PEARS.

Standard Risk Activities – those activities assessed by risk assessment not to be high priority risks, based on the likelihood/consequence risk matrix. These works, may be regularly occurring works which can be assessed by generic method statements for the varying processes rather than by writing a detailed site specific method statements.

Standards Management Group – a forum that was envisaged by C Change for review of changes to Railtrack standards but which was replaced in 1998 by alternative processes.

Standards Portfolio – the complete suite of published Network Rail standards.

Standards Review Manager – a manager within the Network Rail Line Safety Directorate responsible for ensuring that the portfolio of Network Rail Line Standards is managed according to the due process.

Station – includes terminal, depot, yard or halt (as per Rule Book).

Station Limits – the portion of line between the Home Signal and the Section Signal for the same line worked from the same signalbox. (NB: this term applies irrespective of whether or not there is a station open for passenger or freight use. It does not apply on a Track Circuit Block line.

Statistical Journal Entry – a journal entry in which non-financial information is entered, such as headcount, production units and sales units.

Steps – freight access charging system, generating rates for freight services.

Stewardship Report – a report prepared by the RT1A contractor to comply with the Railtrack Line Specification on Stewardship Reports providing an overview of the safety issues relating to the works on each contract including infrastructure performance. Each report covers a specified three-month period.

Stock rail – the fixed rail on each side of the points, against which the switch rail rests. On standard points, one stock rail is straight and the other curved to carry trains on deviation.

Stock rail bend – the bend or set which must be given the stock rail at the vertex of a switch to allow it to follow the gage line on the turnout. Usually, only one stock rail of a switch is bent. The opposite one is straight.

Stop Block – a buffer stop.

Stop Signal – any main signal which can display a stop aspect or indication.

Stop, Car (US) – a device for stopping a car by engaging the wheels, as distinguished from a buffer, which engages the coupler of a car or the front buffer beam of a locomotive.

Strategic Materials – restricted availability components with a potentially critical impact on operating performance and which must be freely transferable between contractors, and as defined in the Strategic Materials Catalogue.

Strategic Rail Authority – a body proposed by the Parliamentary Select Committee for Transport report in March 1998 and implemented as the Shadow SRA in 1999. Became a legal entity at the beginning of 2001 with the remit of awarding and controlling franchises, developing the railway network and acting as the sponsor for major projects. It will be abolished in 2005 and its functions will be absorbed by Network Rail, the Office of the Rail Regulator and the Department for Transport.

Stepping Back – a process where a terminating train arrives at a platform and a relieving driver immediately joins the rear cab, which will then become the front cab on departure. Used on LUL to speed up reversing in a platform by eliminating the need for the driver to ‘change ends’.

Stress Restoration – the process of stretching CWR so that the SFT of the rails is the same as it was before the CWR was disturbed for maintenance and other purposes.

Stress Transition Length – the length of track at each end of a length of CWR between the point of zero stress (the adjustment switch) and the point of full stress (i.e. stress free at 27°C). Note: a stress transition length may be used as an anchor for stressing purposes but must not contain any S&C even if these are strengthened for use in CWR.

Stress-Free Temperature – the rail temperature at which the rail is the same length as it would be in an unrestrained state and at which, therefore, there is no thermal extension or compression force present. Generally used when discussing continuously welded rail (CWR). [±]

Stressing – the process of stretching CWR so that the stress-free temperature of the rails is within the required range (21 to 27°C).

Stressing Naturally – the clipping down of the rail without tensors (stretching equipment) being used, when the rail temperature is between 21 and 27°C.

Stretcher Bar – metal bar that connects the two switch blades in a turnout in one or more places and allowing adjustment of the relative position of the switch rails.

Strike-in Point – the position on the approach to an automatic level crossing at which a train initiates the operating (closing) sequence.

Stringlining (US) – a method for determining the corrections to be made in the alignment of a curve, by measuring ordinates to the outer rail and without the use of surveying instruments.

Structure – a construction such as a bridge (rail, road, foot or equestrian), viaduct, retaining wall, tunnel or similar, signal or electrification post or gantry, station construction such as a platform wall, track drainage manhole or cable pit, and any other construction on Network Rail controlled infrastructure.

Stub – track section with access from only one end.

Stub End – a section of conductor rail fed from one point only.

Sub-ballast – any material of superior character, which can be spread on the finished subgrade of the roadbed, to provide better drainage, prevent upheaval by frost and better distribute the load over the roadbed.

Subgrade – the prepared surface of the natural ground or upper surface of fill material.

Subsidiary Signal – a miniature semaphore arm positioned under a main semaphore arm, or a position light aspect positioned below a main aspect, which when cleared, authorises a Driver to pass the main arm or aspect at Danger and to proceed cautiously.

Substation – a location where power is received at high voltage and changed to required voltages and characteristics for distribution to the catenary system, third rail, and other electric apparatus. It may contain transformers, rotating machinery, circuit breakers, sectionalising switches, rectifiers, etc.

Substructure – the track substructure includes the formation, ballast and any geotextile, geogrid, blanket.

Super-elevation – the height the outer rail is raised above the inner or grade rail, on curves, to reduce the lateral acceleration of moving trains. This should not be confused with cross-level, on tangent (straight) track. (UK: Cant)

Supervisory Control and Data Acquisition System – (SCADA) centralised control of routine and emergency operation of a large technical system using data links to remote components and data-bases for managing and monitoring their performance.

Supervisory Control Centre (SCC) – traffic control centre for a railway using modern forms of train control (US term).

SUPPER – a module within PROCSYS for recording supplier performance information.

Supplier – a generic term used to describe a company, contractor, consultant or partnership supplying works, goods or services.

Supplier Qualification – a process whereby all potential suppliers or contractors are subject to scrutiny on a range of topics to ensure that each supplier or contractor is appropriately qualified to be invited to tender for a Network Rail contract.

Surface Water Drain – a drain designed to collect water from the surface and/or from the surrounding ground continuously along its length.

Surface, running (tread) – the top surface of the railhead on which the wheel tread rides or runs.

Surfacing, out-of-face – raising the entire track to a new grade.

Sustrans – an organisation primarily concerned with the creation of cycle paths throughout the UK. Their name is a contraction of sustainable transport.

Swap Body – a system for conveying road freight vehicle bodies on rail vehicles without road-running gear.

Swing Nose Crossing – a point in which the flangeway at the nose is arranged to open or close according to which way the points are set so as to provide a smooth passage for the train wheels.

Swinger – railway slang term for an unbraked and unpiped vehicle normally attached to the rear of a train.

Switch (US) – a track structure used to allow rolling stock to move from one track to another. A pair of movable point blades, together with their fastenings and operating rods, provides a connection with variable geometry (2 pcs). See also turnout.

Switches and Crossings (S&C) – the specially designed rail components allowing trains to change tracks. Any track elements which are not plain line.

Switch Fixtures – the connecting and bearing parts for the rails of a split switch.

Switch Guard – a structure, usually of manganese steel, secured outside the running rail at the point of switch, with suitable flares to engage with the tread rim of wheels and guide them past the switch point without blow or undue wear.

Switch Heel – blunt end of a switchblade that is connected to the closure rail.

Switch Heater – a device for melting snow with heat generated by an electric current, or by gas or oil; used for movable parts of switches, etc.

Switch Lock – mechanical device attached to both the switch rail and stock rail to ensure that the switch rail remains fixed for the passage of a train. In many countries, they are a legal requirement where passenger trains are operated. The turnout is also electrically locked by the control system (interlocking) and by track circuits occupied by a train passing over them (see also Detection).

Switch Lock – a fastener, usually a spring padlock, used to secure the switch or derail stand in place and thus to maintain the correct position of these components. A switch lock is used in situations where a switch rail or derail is only operated rarely.

Switch Plate – a special metal tie plate for use on switch ties, each plate being long enough to extend not only under the stock rail and its supporting braces, but also under the switch rail in open position. Switch plates are furnished in sets to correspond with switch length. There are two plates to each tie; however, at point of switch, the two may be replaced by a gage plate which carries both switch rails.

Switch Rail – the moving portion of rail on each side of a set of points. Also known as Point Blades. &

Switch Rod, adjustable – a switch rod with an attachment for altering its length to keep the switch rails in their proper positions. Adjustment is usually effected through staggering holes in the clips which connect switch rod and switch rail.

Switch, Staggered-point – a switch in which the toe of one switch rail is placed in advance of the other, as in a turnout from inside a curve.

Switch Target – a visual day signal fixed on the spindle of a switch stand, or the circular flaring collar fitted around the switch-lamp lens, and painted a distinctive colour to indicate the position of the switch.

Switch, Throw of – the distance, measured along the centre line of the rod nearest the point connecting the two switch rails, through which switch points are moved sideways to bring either point against the stock rail; standardised at 43/4 inches.

Switching Yard (US) – (see Marshalling Yard (UK)).

Switch Toe – the pointed end of a switchblade that rests against the stock rail.

System Review Panel – specialist body with responsibility to consider specific system and safety issues.

Systems Management Framework Design – an RTIS project to identify, document and implement IT processes, initially in the Operations and Technical Services area.

- T -

T2 X, D, H, T (Blockage) – arranging protection on line when Tiii Possession is not required (see Tiii Possession).

Tache Ovale – a rail fault consisting of a void within the rail, with nothing visible on the surface of the rail. It can be detected with ultrasonic scanning equipment.

Tail Lamp – a lamp carried on the rear of every train (it may be built into the vehicle) to indicate that the train has arrived complete and no vehicles have become detached. If a signaller sees a train pass without a lit tail lamp he must stop the train.

Taktfahrplan – a timetable involving regular ‘clockface’ departures used by some European railways.

Tamping – process that pushes ballast under sleepers (see also Regulate) to fill voids so as to maintain the correct geometry of the track. Can damage the ballast and may not be effective due to “ballast memory”, that is the tendency for ballast to return to the mutual positions existing before tamping (see stone blowing).

Tangent Track – track without curvature.

Tardis – Time and Relative Dimensions In Space. Even more improbably, it can stand for Ancillary Retrospective Data Information Service. (see also TOPS)

Target 90 – an initiative aimed at ensuring that 90% of WCML passenger trains arrive at their destination within ten minutes of their scheduled arrival time.

Task Specification Form – a document defining scope and criteria to be adopted, particularly with respect to PMCS software changes.

Team track – a track on which freight is transferred directly between railway cars and highway vehicles.

Technical Approval – technical approval signifies that, based on a systematic review, a professionally competent person or body is satisfied that:

- the requirements of the remit have been established and met;
- the appropriate standards and/or design criteria are proposed for the design/checking phase
- competent persons have used reasonable professional care in designing and executing the scheme;
- the safety of railway operations and safe interworking have not been compromised

Technical Contractor – a consultant, contractor or supplier engaged (by Network Rail) to supply a technical service.

Technical Review Group – an ad hoc temporary panel established under remit to consider specified technical issues.

Technical Support – staff charged with the investigation into existing technologies and working practices (of Network Rail) to resolve technical issues arising. [±]

Technical Support Group – Network Rail HQ Civil Engineering Technical Support Group.

Technical Worksopce – the section of a contract document which, includes all project-specific information and details the technical specification, implementation standards and assurance requirements.

Tell Tales – marks made on each rail in a line with a suitable reference mark on an adjacent unclipped sleeper, in order to monitor the effectiveness of the anchor length. A tell tale is required at each end of each anchor

length. That adjoining the free rail is the *inner tell tale* (which must be unclipped); the other is the *outer tell tale* (which must remain clipped).

Ten Foot (UK) – 10ft is the central space between adjacent pairs of running lines on a four track railway. Beware, this may actually be less than the six foot. [±]

Terminal – an assemblage of facilities provided by a railway at a terminus or at an intermediate point for the handling of passengers or freight and the receiving, classifying, assembling and dispatching of trains.

Tesco – Technical Services Company, provides engineering services associated with traction and rolling stock maintenance.

TETRA – high integrity mobile communications system developed specifically for emergency services and police use, originally intended for railway use.

Thameslink 2000 – the project by which the existing cross-London Thameslink route is modernised.

Thimble – the cylindrical pieces of an insulating joint which surround portions of the bolts.

Third Rail – An additional rail beside the two running rails which carries electric current for trains which operate on this electrical system.

Third Rail System – traction current supply system which uses an additional rail to transmit the electrical supply from where it is collected by collector shoes attached to the train. See fourth rail system and conductor rail.

Throat – the area of a station where tracks from an incoming line fan out to serve the different platforms.

Through Ticketing – The ability, in one transaction, to purchase a ticket for a journey using the services of more than one operator.

Tie (US) – a transverse support to which rails are fastened to keep them in line, gage and grade. Usually wooden or concrete. See Cross tie. (UK: Sleeper)

Tiii Possession – when an engineer takes absolute possession of a section of track or line. [&]

Tie Plate (US) – a metal plate at least 6 inches wide and long enough to provide a safe bearing area on the tie, with a shoulder to restrain outward movement of the rail. (UK: base plate or chair)

Tie Plate, canted (US) – a tie plate tapered in thickness, usually on a slope of 1 in 20, for the purpose of inclining the rail toward the centre of track for easier maintenance of gage, more uniform wear of head, and central loading of rail.

Tie Plate, twin (US) – a tie plate in two parts which mate to form a combined width equal to that of the standard tie plate, for use back of the heel of switch to the point where standard tie plates may be applied without their ends infringing.

Timbers – bunks of wood supporting switches and crossings; can extend to two or more lines and be up to 20ft in length.

Time Division Multiplex – an electronic data transmission system that has two distinct railway applications – in power signalling installations and in remote control of a locomotive for push-pull working.

TimeTable DataBase – a Journey Planner facility which allows the public to view timetable information remotely through the internet or VDUs at stations.

Tyne – part of a tamping machine which is pushed (in pairs) into the ballast either side of a sleeper.

Token – (or tablet) a device carried by a Driver as his authority to run over a single line worked by the Electric Token Block System.

Top And Tail Working – running trains with an engine at each end, usually during disrupted working to avoid time-consuming running-round movements.

Top-Ballast – any material of a superior character spread over a sub-ballast to support the track structure, distribute the load to the sub-ballast, and provide a good initial drainage.

TOPS – Total Operations Processing System, a prime source of train movement information for other systems. TOPS.

Total Operations Processing System (TOPS) – computer based system used to record information from train describers, signal boxes, and track circuits at junctions. TOPS provides a comprehensive system for monitoring a train's complete movement cycle from workshop and maintenance through to service, safety

restrictions, train schedules and performance. Is used to monitor railway operations and rolling stock usage and for the management of maintenance. Now described as TRUST.

Track – an assembly of rail, fastenings and sleepers over which railway carriages, wagons, locomotives and trains are moved. The track is usually defined as the area covered by the rails, rail fastenings and sleeper hardware and the roadbed.

Track Access Notice – the means of publishing short term additions and alterations to the train plan. ^R

Track, Body (US) – each of the parallel tracks of a yard, on which cars are switched or stored.

Track Circuit – means by which the passage of trains is detected and the information used to control signals provided for train safety and control. This method of train detection (train location) uses a voltage which is applied at one end of a track section and detected at the other end. An electric current must flow in the rails of the track which therefore requires insulation of the rails with respect to each other. Rail joints between track circuit sections must be specially bonded at rail joints used by the signalling system. When a vehicle enters the track circuit section the detection occurs when its wheelsets (wheels and axles) short-circuit the rails together and interrupt the flow of electricity to the receiver. Track circuits can be based on High voltage, Pulse, DC, Audio Frequency signals etc. The simplest track circuit consists of a relay energised by a low voltage circuit fed through the running rails of a section of track.

Track Circuit Actuator – a device fitted to some vehicles, notably lightweight disc-braked diesel railcars, which cannot be relied upon to activate track circuits when leaf mush is on the line or the rails are rusty. It does not work if the lead mush is dry.

Track Circuit Activator (TCA) – equipment provided on certain lightweight trains to improve their operation of track circuits.

Track Circuit Actuator Interference Detector – a lineside device which detects the radio waves caused by a Track Circuit Actuator on a passing train, thus giving an indication of the train's presence even if the actuator fails to operate the Track Circuit. It does not fail safe however.

Track Circuit Block – a modification of the Absolute Block System, employing track circuiting throughout. As soon as the line is clear, a train may proceed to the next stop signal plus the required overlap beyond that signal.

Track Circuit Operating Clip – a device used on track circuit block lines to provide emergency protection by shorting out the track circuit, thereby placing signals to danger. Differs from a track circuit operating device which is used to protect engineering work on a line not under possession (Rule T2). Track circuit operating clips are one-use only, and must then be disposed of.

Track Circuit Operating Devices – a special device which can be placed on a TCB line to provide protection, by operating TCB (Track Circuit Block).

Track Crossing – a cast or fabricated crossing assembly, used where one track crosses another at grade, and consisting of four connected crossings.

Track Fastenings – the term commonly applied to baseplates, rail clips, screws and spikes.

Track Fastenings, auxiliary – the term commonly applied to spring washers, tie plates, rail braces, anti-creepers and gauge rods.

Track Identifier – a rail fault consisting of a void within the rail, with nothing visible on the exterior. It can be detected with ultrasonic scanning equipment.

Track Irregularity – Civil Engineer's track identifier: generally a subset of Engineer's Line Reference (ELR).

Track Level – a board with a spirit level attached, to level the rails of a track usually equipped with a series of steps to set super-elevation on the outside rail of curves.

Track Quality – an integral part of railway track recording systems. Mounted on a track recording vehicle, it gives a comprehensive assessment of the condition of the track over which it runs. The quality of the track is monitored to Railway Safety and Standards Board Group Standards' requirements. [±]

Track, Repair or Rip (US) – one of the body tracks in a car repair yard or shed, on which repairs are made to rolling stock.

Track Sectioning Cabin – a building containing electrical switchgear and equipment which is arranged to connect together a number of sections of OLE.

Track, Spur (US) – a track connected with the parent track at one end only.

Track, Storage (US) – one of the body tracks in a storage yard, or a track used for storage purposes.

Track-Laying machine – a machine designed to minimise the manual labour of placing rails, fastenings, ties and other materials.

Trackside Functional Module (TFM) – failsafe electronic unit of the SSI system which is able to control a multiple aspect signal or points and which transmits its status to the SSI central processor in the control room.

Trackwork – railway track or permanent way including buffer stops and level crossings in the immediate vicinity of the tracks. The term includes longitudinal pit timbers but excludes the pits themselves.

Traction Current -term used for electric power supply used on electric railways for trains. Normally supplied by overhead wire or third rail and collected by a pantograph on the roof of the train in the former case or by shoes attached to the bogies in the latter.

Traction Motor – electric motor used to provide the driving or braking torque to a locomotive or multiple unit axle. Used in diesel-electric and electric systems. The traction motor is mounted close to the axle and transmits power through a reduction a final drive gearbox or final drive.

Traction Unit – generic term for a railway vehicle which can move under its own power. It includes locomotives, multiple units, self-propelled rail vehicles and road rail vehicles operating in rail mode.

Tractive Effort – a term for the force applied by traction equipment to accelerate a train.

Trailer Car – a passenger vehicle in a multiple unit train which has no powered axles.

Trailing Load – the weight of unpowered vehicles in a train which the locomotive has to pull.

Trailing Points – where lines converge in the direction of travel (also see Facing Points)

Train – a consist of one or more basic operating units.

Train Control System (US) – American designed software tool for managing train operations. English, Welsh and Scottish railways intended to use TCS to control its freight operations as a successor of TOPS.

Traincrew – driver and guard (Rule Book definition).

Train Descriptor – the set of equipment which (except in IECC areas) ensures that the identity of each train is displayed on the signalbox panel together with the indication of that train's presence. In these areas the Train Descriptor circuitry also generates TRUST report data. Once a train ID has been entered, it is automatically updated in displays when the train enters a new section.[±]

Train Id – train identifications are displayed electronically to a signaller to supply him or her with the description of approaching trains. Modern descriptors use the Four Character Train Identification system (reporting number) such as 1A23. (see also Head Codes for fuller description)[±]

Train Operated Route Release – a method of releasing a route after passage of a train without further action from the signalman.

Train Operated Warning System – audible warning system, provided over the lineside in locations listed in the sectional Appendix. When switched on it gives warning of the approach of a train.

Train Operator – an organisation authorised and licensed to operate trains over the Network Rail network infrastructure that holds an accepted Railway Operator's Safety Case and a Rail Operator's Licence.

TrainPlan – part of the integrated operational planning system of Network Rail, produced by Vossloh System Technik Ltd. (formerly: VST Comreco Rail Ltd.), used for developing train paths which are loaded into the timetable system database (TSDB). see RailPlan.[±]

Train Protection and Warning System (TPWS) – train protection system which, can be fitted on trains which, are wired for AWS. Coils in the track transmit signal clear / at danger / stop commands but do not provide an uninterrupted beacon sequence. A first beacon can be used to trigger a timer which stops the train if it is still running when the second beacon is encountered.

Train Register – a book kept by signallers to record the passage of trains, transmission of bell signals and any exceptional circumstances.

Train Running System – another name for TOPS, the computer system which records details of train running as compared with schedule. Its offshoot TRUST-DA is the system for recording the size and reason for delays recorded by TRUST.

Train Services Database – holding all available data about planned train services which have been agreed with Railtrack zones throughout the country, ensuring reliable running of the railway network.

Train Set – a group of coupled cars including at least one power unit.

Train Signalling Regulations – instructions for use by the signaller that give details of the rules, regulations and instructions relating to each different kind of signalling system (Rule Book definition).

Train Staff – a labelled and distinctive piece of wood or metal which must be carried by the driver of a train on a one train working (with train staff) line to ensure no second train can possibly be admitted to the section of line concerned.

Train Stop (1) – a train signalling and control system designed to mitigate the consequences of a SPAD by enforced braking and speed control.

Train Stop (2) – mechanical arm located on the wayside, in conjunction with a wayside signal, which causes an emergency brake application when a train passes the signal at danger and the arm is in tripping position. (also see Tripcock) [±]

Train Stop (3) – magnetic equivalent of the mechanical train stop using an arm located on the wayside. The German INDUSI (installed on the Tyne and Wear metro) and the Swiss SIGNUM system are both train stop systems with enhanced capability. The on-board system may be able to discriminate two or more states of the signalling system thanks to the transmission of different frequencies or polarities. [±]

Transition Curve (UK) – a curve of continuously changing radius and cant to provide a gradual transition between tangent track and a simple curve or between two simple curves. The curve shape is normally defined by a mathematical expression such as a spiral or a parabola etc. Transition curves are necessary to reduce jerk to a level acceptable to passengers, to guide the wheelsets into the curve and to minimise track forces. Transition curves are also necessary to change from level to inclined track. (US: Easement Curve, Spiral Easement, Transition Spiral)

Transitional Curve – the designed parabolic curve linking a straight rail to a full curve.

Transmission Based Signalling (TBS) – a system in which the driver is authorised to proceed by radio and, usually, a cab display rather than by observing lineside signals. [&]

Transmission Based Train Control (TBTC) – generic term for the combination of technologies required to provide a high integrity system of train protection and control which is free of trackside signals. ETCS level 2 and 3 and West Coast TCS are particular implementation of TBTC.

Transponder – track based device to transmit information to a train and, in some cases, to receive information from the train. See also **Balise**.

Transport Operations Rapid Update System – a Racal system giving information on location of public transport vehicles using GPS and TRACE.

Transport Radio Asset Control Equipment – a Racal system for monitoring the locations of public transport vehicles to provide input to TORUS.

Trap Points – a pair of worked facing switches located at the exit from sidings, goods lines or loops; their purpose being to derail a train leaving without authority and thereby to protect trains on adjacent lines.

Traxcavation – removal of ballast with heavy excavation machinery.

Treadle – an electrical switch operated by the train wheels.

Tribometer – a device for measuring the adhesion between wheel and rail.

Truck – the complete assembly of parts including wheels, axles, bearings, side frames, bolster, brake rigging, springs and all associated connecting components, the function of which is to provide support, mobility and guidance to a railway car or locomotive. ((UK) – Bogie).

TRUST – the train reporting system based on the TOPS hardware and software.

TRUST-Delay Attribution – the system for recording the size and reason for delays recorded by TRUST.

Tunnel – a structure provided to allow a railway line to pass under higher ground, and which has been excavated without disturbing the surface of that ground.

Turbo – Class 165 and 166 diesel multiple units operated by Thames Trains and Chiltern Railway.

Turbostar – Class 170 and 171 diesel multiple units operated by Central Trains, Midland Mainline Scotrail and Southern Railway.

Turbostar – Bombardier (formerly Adtranz) built diesel mechanical multiple units used nationwide.

Turnback Siding – a siding where trains can be turned back to start their journey in the reverse direction.

Turnout (UK) – the trackwork element where a track divides into two. A turnout normally has two positions, normal and reverse. The rails are specially shaped to allow a smooth transition from the main track to the diverging track. The switch rails of the turnout are operated by the point motor or machine and guide the wheels to the reverse or normal direction. The crossing (US: frog) allows the wheels to cross the stock rails (US: switch). See page 59 for an illustration. ⁺

Turnout Number – See Number, Turnout.

Turnover Locomotive – a locomotive which waits at a terminal station to take an incoming train away in the opposite direction, where the incoming loco cannot run round the train. The loco which brought the train in then becomes the new turnover locomotive.

Twin Block Reinforced Sleeper – a sleeper which consists of two reinforced concrete blocks connected by a steel bar or angle iron. This features higher longitudinal and lateral resistance to movement than a standard concrete sleeper.

- U -

UIC – Union Internationale des Chemins de Fer, or International Union of Railways. The European railway regulating body which sets engineering and operating standards for railways. Equivalent to the AAR in the United States.

Underbridge – a bridge crossing under Network Rail property, that is, a bridge which supports the railway. This includes bridges for roads, footpaths, services, watercourses or industrial use. Such a bridge will normally support operational tracks.

Underline Bridge – a structure of at least one span of 1.8 metres or more whose main purpose is to carry rail traffic over an obstruction or gap.

Unfitted – refers to vehicles which have neither an operative brake nor a through brake pipe.

Unsafe Track Condition – a track irregularity or track condition of such magnitude so as to be specified as requiring immediate action.

Unworked Points – points that are not operated from a signal box or ground frame (Rule Book definition).

Up Line – rail line generally taking trains towards London or the main regional destination, e.g., Manchester or Glasgow.

Up Relief Line – the Great Western term for the Up Slow Line.

User Worked Crossing (UWC) – level crossing on a private road or track with manually operated gates that open away from the railway, unlike standard manually operated crossings. This type of crossing represents a substantial risk to the railway because users often leave the gates open. UWCs can be equipped with MSL warning lights and / or a telephone.

- V -

Validation – according to EN 50126, the act of establishing correctness with respect to intent, representing horizontal checks and tests in the VEE-model.

Value Of Time – the value placed by passengers on their time. Time can be traded off against fares using the VOT. The British average is currently around £6/hour (similar to the level of the national minimal wage), but this conceals a range up to £40/hour for the business market segment.

Variation Instruction – a record of alteration to dimensions or scope of the contract authorised by the customer’s representative and identifying consequences of alteration.

Variation Order – a synonym of variation instruction.

VEE Model – a diagrammatic representation of good practice in (railway) systems engineering, starting on the left hand side with stakeholder requirements capture and finishing on the right hand side with entry into service or, in a full life-cycle approach, decommissioning. The VEE process is associated with V&V and Verification and Validation.

Verification – according to EN 50126, the act of establishing correctness with respect to specification, which can confirm readiness to move to the next phase in the VEE-model.

Very Short Term Planning – the processing of track access bids received by Operational Planning up to two days before possession.

Viaduct – a multi-span bridge structure; e.g. Ribbleshead Viaduct.

Vital Processor Interlocking (VPI) – approach to interlocking design, pioneered by General Railway Signal of the USA, involving a single micro-processor which uses mathematical methods to ensure the integrity of the system.

- W -

W6-W12 Gauge – loading gauges for standard freight vehicles. Dimensions are given in **Waterproofing System** – a material or combination of material, including a membrane and where applicable a protective layer, laid to form an impervious barrier to protect the bridge deck from the ingress of water and fuel oil.
Table 1 for the loading gauges on a range of typical intermodal routes.

Waterproofing System – a material or combination of material, including a membrane and where applicable a protective layer, laid to form an impervious barrier to protect the bridge deck from the ingress of water and fuel oil.

Table 1 Loading Gauges Applicable to the British Railway Network (NR, 2002)

Unit Type	Container*		Swap Body [#]					
Unit Width	8ft		2500mm		2550mm		2600mm	
Wagon Type	IFA	IKA	IFA	IKA	IFA	IKA	IFA	IKA
Maximum Unit Height	Feet, Inches		Mm					
W6	8'	8'6"	2448	2565	2421	2535	2393	N/A
W7	8'	8'6"	2448	2568	2448	2565	N/A	N/A
W8	8'6"	9'	2665	2795	2665	2705	N/A	N/A
W9	9'	9'6"	2775	2895	2775	2875	2755	N/A
W12	9'6"	9'6"	2955	3075	2955	3075	2905	3025

Wayside – everything along the rail line except the operating rail equipment.

Weave – type of possession established by forcing train services to use alternately different tracks of a multiple track railway (two or more tracks).[±]

Web of Rail (UK) – space between head and base of a rail occupied by the fish plate at rail joints.

Weekly Operating Notice – contains the engineering work for the forthcoming week and any other information traincrews may require.

Wheelskate – a device used in the case of a locomotive or vehicle having a wheel which is seized and will not rotate freely, to enable it to be moved clear of a running line.

Wheeltimber – (see Longitudinal Timber.)

Welded Vee – two pieces of rail with parts of the head and foot removed by machining placed either side of a filler plate so as to form a weld preparation, welded using the electroslag welding process and subsequently machined to the drawing requirements.

Welwyn Control – a device which must be operated by a signaller before he can clear a section signal when he cannot be give “line clear” from the box in advance. The object is to make it something he cannot do without thinking. First introduced after a serious accident at Welwyn Garden City.

West Line – the line from Newcastle to Hexham and Carlisle.

Wheel Flat – a localised flat area on a steel wheel of a rail vehicle, usually caused by skidding on steel rails, causing a discontinuity in the wheel radius.

Wheel Impact Load Detector – a device which measures the force exerted on the rail by each wheel of a train as it passes and activates an alarm if any are excessive.

Wheel Set – a fixed formation of an axle with two wheels set at the correct gauge for the track. The wheels are pressed onto the axle and rotate with it as a unit. It is mounted into the bogie (or vehicle) frame with using axle boxes.

Wheel Slide – synonymous with skidding and usually caused by over braking during poor adhesive conditions. It is a common cause of wheel damage, as it produces a flat spot (called a "flat") on the wheel where the skid occurred. Severe flats have been known to derail a train.

Modern rolling stock is equipped with various systems to assist with the elimination of wheel slide. These include load control, automatic brake "dumping" if a slide is detected, cosmetic rail applications like Sandite to improve adhesion and attention to maintenance of correct mechanical brake settings. See also our brakes section.

Wheel Slide Protection – a system fitted to most modern passenger rolling stock and traction units which acts in a similar way to ABS, automatically reducing braking effort when wheels start to lock-up, thus aiding drivers in conditions where adhesion is poor.

Wheel Slip – the phenomenon caused on a locomotive or power vehicle by over application of power to the drive system relative to the available adhesion. It can cause damage to electric motors and is normally automatically detected to immediately eliminate or reduce the power being applied. A modern system recently developed using microprocessors is known as creep control and permits a certain degree of slip as this has been proven to improve torque transmission efficiency.

Wheel Slip Protection – a system fitted to most powered passenger rolling stock and traction units which limits tractive effort in conditions where adhesion is poor.

Wheel Squeal – the noise produced by wheel-rail interaction, particularly on a curve where the radius of curvature is smaller than allowed by the separation of the axles in a wheel set.

Wheelskate – a device which is used in the case of a loco or vehicle which has a wheel which is seized and will not rotate freely, to enable it to be moved clear of a running line.

Wheeltimber – (see longitudinal timber.)

Whistle Board – a lineside board which indicates to train drivers where they should sound their horns on the approach to a fixed potential hazard.

Wicket – a small gate sometimes provided for pedestrians at a level crossing.

Will – a word used in procedural documents to express a requirement to comply with a provision or service. Compare with shall, should, must, may.

Witnessing Officer – a member of managerial or professional staff who is not involved in the evaluation, negotiation or contract award process for that particular tender.

Worked Points – points that are operated from a signal box or ground frame.

Working Time Patterns – the framework of working time that is defined by documented rules governing the preparation of rosters.

Work-site Marker Board – a board placed at the limit of a worksite within a possession. It has three yellow lights facing into the worksite, and three red lights facing out of the worksite.

Wrong Side Failure (WSF) – a failure which could cause an unsafe condition, eg. a red light turning to green (see also the opposite – Right Side Failure). Where a train leaves a station at an earlier than published time, potentially causing passengers to miss the service.

Wye (US) – a triangular arrangement of tracks on which locomotives, cars and trains may be turned.

- Y -

Yard – a system of tracks within defined limits provided for making up trains, storing cars, and other purposes, over which movements not authorised by time table or by train-order may be made, subject to prescribed signals and rules, or special instructions.

Yard Track (US) – a track within a yard used to receive cars for classification for re-routing.

Yellow – The caution aspect of a signal.

Yorkshire Rail Academy – a joint venture between the National Railway Museum and York Technical College, supported by the Learning and Skills Council, for the training of technical staff for the railways.

Yellow Book – publication providing guidance on achieving safety on the railways. Engineering Safety Management (or the Yellow Book as it is more commonly known) is a handbook designed help people who are involved in changes to the railway (such as new trains and signalling) make sure that these changes contribute to improved safety. It is published by the Yellow Book Steering Group. Details about the Yellow Book can be found at http://www.yellowbook-rail.org.uk/site/the_yellow_book/the_yellow_book.html.

Yellow Box – work which is in the conceptual stage (see also red and green).

Your Employer – the company or subsidiary of a larger organisation for whom you work (Rule Book definition).

- Z -

Zero minute board – a board placed on a signal indicating to the driver that he must use the telephone to contact the signaller immediately if the signal is at red. These boards are occasionally placed at signals permanently, but are more usually applied on a temporary basis because of operational difficulties. ^{RAIB}

Zone Hazard Directory – a document which provided, in an easily accessible format, lists of site specific health, safety and environmental hazards to allow contractors and others on Network Rail infrastructure to be aware of the hazards at a particular location and to develop appropriate safe systems of work.

UK versus US Terminology

US	UK	Comment
Add	Couple	Vehicles to a train
Bi-Level	Double-Deck	Passenger vehicle
Brake Stand	Brake Controller	In Cab
Bump Stop	Buffer Stop (marks end of line)	See "stubbing post"
Car	Coach, carriage	Trailer in some countries
Caboose	Brake Van	
Car Barn	Carriage Shed	
Catenary	Overhead line	
Conductor	Guard	
Consist	Rake/Formation	...of train
Cornfield Meet	Head-on collision	...in clear, open country
Cut	Uncouple	...vehicles from train
Dead Head	Engine under tow	In US, sometimes called 'unsked' light running
Dispatcher	Controller	... of Route or area
Draft Gear	Draw Gear	
Dummy	Shunt Signal	ground signal
Engineer	Driver	
Freight car	Goods wagon	
Grade	Gradient or bank	..in US, 'at grade' is level gradient
Grade Crossing	Level Crossing	
Head end	Front	... of train
Highball	Clear	... signal
Hooking up	Notching up	... locomotive power
Lay Up	Stabling	To put a train out of service..depot
Maintainer	Fitter	
Maintenance Facility	Depot	
Maintenance of Way	Permanent Way Maintenance	
Pocket Track	Reversing siding/bay road	
Set	Apply	... of brakes
Schedule	Timetable	
Shop	Workshop	
Siding	Loop	In UK, on single line, a 'dead end'
Special Trackwork	"Point & Xing" work (P&C)	In UK, also Switch and Xing ((S&C)
Spiral	Transition Curve	... trackwork
Stubbing post	Buffer stop	... see bump stop
Subway	Underground rail	
Superelevation	Cant	... of track
Switch	Points	
Tie	Sleeper	... from term 'cross tie'
Train Line	Brake Pipe	... train line on LUL
Train Station	Railway Station	
Truck	Bogie	
Turnout	Points	... see also 'switch'
Wayside	Lineside	

Illustrations:

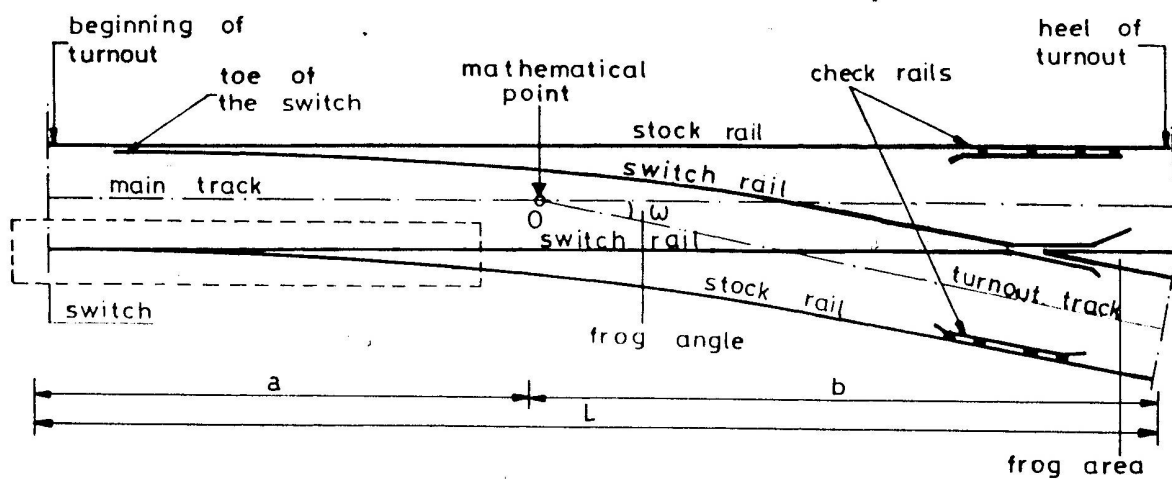


Figure 2 Railway Turnout

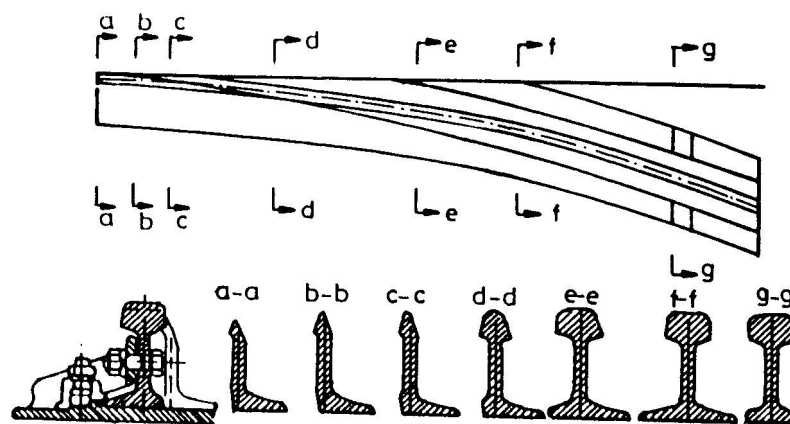


Figure 3 Switch Rail Shapes in a Turnout

